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ARTICLE I.

Observations on Sanguineous Tumours of the Head which form spontaneously, sometimes denominated Cephalæmatoma, and Abscessus Capitis Sanguineus Neonatorum. By E. GEDDINGS, M. D. Professor of Anatomy and Physiology in the University of Maryland.

THE disease upon which we propose to offer some remarks, is a soft fluctuating tumour, containing blood, generally occupying some portion of the scalp, mostly over the parietal bone, often accompanied with hard, prominent, uneven, circumscribed borders, imparting to the touch the semblance of a depression of the corresponding portion of the cranium. Such tumours are seldom observed, except in new-born infants; yet they are now and then met with in children of a more advanced age, and in some rare instances even in adults. The disease is not one of very frequent occurrence; yet when it is considered, that there are few engaged extensively in obstetrical practice, who have not had occasion to meet with it repeatedly, it is a little remarkable, that it should have received so small a share of the attention of practitioners, and that so few writers on the diseases of infants have noticed it. With only a few exceptions, it has been entirely overlooked, or very imperfectly described, by English, French, and American authors; and although the German physicians have investigated it with more attention, its characters still remain involved in much obscurity. Indeed, so far

as our own country is concerned, the works which are in the hands of the profession generally, scarcely contain any notice of it, and as, we doubt not, there are many practitioners who have experienced more or less embarrassment on encountering a disease for the first time, which they had not seen described, we have thought we might be rendering an acceptable service to many, by offering such information on the subject, as we have been able to collect, either from our own observations, or from the labours of those who have made it an object of special inquiry.

1. *History of the disease.*—It is highly probable, that these sanguineous tumours, or abscesses, of the head were observed by practitioners of an early period, but as they have been generally confounded, until within a few years, either with hernia of the brain, or those fluctuating protuberances of the scalp which are occasioned by external violence, the first clear descriptions of them to be found are of comparatively recent date. It will indeed be observed, by referring to most of the treatises on obstetrics and the diseases of infants of the present day, that when these tumours have been noticed, they have been imputed either to the pressure of the head of the child against some part of the bony walls of the pelvis, or to some injury sustained during delivery. Under these circumstances, it is exceedingly difficult to offer a satisfactory history of the disease, since from the careless manner in which most of the cases have been described, it would be impossible, after so great a lapse of time, to distinguish between such as were proper examples of the spontaneous sanguineous tumours under consideration, and those which owed their origin to violence, or some other cause. That different conditions were confounded under the appellations encephalocele, ecchymosis of the scalp, &c. will be rendered apparent in the course of these observations; and it will likewise be shewn, that cases which were unquestionable examples of sanguineous abscess of of the head, were described as instances of hernia of the brain. It does not comport with the objects and scope of this paper, to enter upon a minute and elaborate history of the subject, and as we have neither time nor convenience to refer specially to all the accessible sources of information, we shall content ourselves with the references to the early authors made by Professor Nægele, who has investigated the question with much labour and attention, merely premising, that some of them not being at our command, we are unable to decide positively, whether the whole of

the notices bear upon the disease in question, or if some of them may not refer to some analogous affection. The following authors are enumerated by Nægele, as having noticed sanguineous abscesses of the scalp:—Aétius, Valentin, Mauriceau, Preus, Zwinger, Ledran, Trew, Corvinus, Störck, Bœrner, Smellie, Henkel, Gooch, Ferrand, Chopart, Desault, Camper, Baudelocque, Stein, Voigtel, and Prenke. Most of them, however, have merely considered the subject incidentally, as connected with the practice of surgery and obstetrics, or only reported isolated cases, without attempting to give a pathological exposition of the characters of the affection. It should be remarked, moreover, that by many of the individuals whose names have been mentioned, the disease was described under the name of hernia cerebri—an error which has been committed likewise, by many of their successors; and it is highly probable, that even at the present time, the two affections are sometimes confounded.

Sanguineous abscesses have been either described ex professo, or noticed particularly, by Levret,(1) Siebold,(2) Michaelis,(3) Nægele,(4) Klein,(5) Paletta,(6) Zeller,(7) Hoere,(8) Busch,(9) Carus,(10) Osiander,(11) Gœlis,(12) Chelius,(13) Diffenbach,(14)

(1) Journal de Med. xxxvii, 410. 1772.

(2) Chirurgische Tagebuch, Nüremberg. 1792, Obs. xvi, xliv.

(3) Ueber eine eigene Art von Blutegeschwülsten, in Loder's Journ. bd. ii. Stuck 4. 657. 1799.

(4) Erfahrungen und Abhandlungen aus dem gebïete der Krankheiten des weiblichen Geschlechtes, Manheim, 1811. Also in Journal Complimentaire, tome xiii, p. 227. Paris, 1822.

(5) Bemerkungen über bisher angenommene Folgen des sturzes der Kinder auf den Boden bei Schnellen Geburten, Stuttgart, 1817.

(6) Exercitationes Pathologicæ, Pars i. cap. x. p. 123. Cap. xii. p. 188. Mediolani, 1822.

(7) De Cephalæmatomate, seu sanguineo cranii tumore recens natorum commentatio inauguralis, &c. Heidelberg. 1822. Also an analysis of the same, in Journal Complimentaire, xiii. p. 171. 1822.

(8) De tumore cranii sanguineo recens natorum et externo et interno, &c. Berol. 1825. Also Ueber die äussere und innere Blutgeschwulst neugeborner Kinder, in Von Siebolds Journal für Geburtshulfe, bd. iv. Frankfurt, 1825.

(9) Ein Beitrag zur aufklärung des wesens der schädelblutegeschwulst neugeborner Kinder, Heidelberg. Klinisch. Annalen, bd. ii, p. 245, 256. 1822.

(10) Lehrbuch der Gynækologie, bd. ii. p. 585. Leipzig, 1828.

(11) Handbuch der Entbindungskunst, bd. ii. abth. ii. p. 207. Tubingen, 1821.

(12) Praktisches Abhandlungen ueber die Krankhieten des kindlichen, Alters, bd. ii.

(13) Handbuch der chirurgie, bd. ii. p. 190. Heidelberg and Leipzig, 1829. Also Heidelberg. Klinisch, Anallen, bd. iv.

(14) Rust's Theoretisch praktisches Handbuch der chirurgie, bd. i. p. 120. Berlin, 1830,

Pigné,(15) Velpeau,(16) Mombert,(17) and several others, who have reported isolated cases. We have the memoirs and observations of most of these individuals now before us, besides a number of particular cases, and from these sources, aided by our own observation, we shall endeavour to condense such a description of the disease, as will serve to put our readers in possession of its most important characters.

2. *Description of the disease.*—It is proper to premise, that we do not propose to consider those sanguineous tumours which depend upon blows or contusions of the head, nor shall we notice some other superficial ones of the scalp, which consist of dilated capillary vessels, and which have received the appellation of aneurism by anastomosis, although we shall advert to a similar kind of tumour of the bone. Our observations will be confined to such affections of this kind as take place spontaneously, and which occur chiefly upon the heads of new born infants, though not peculiar to them alone.

These tumours are generally discovered at birth, or shortly after, but sometimes not before the expiration of several days. They likewise occur sometimes at a much later period, and have been occasionally met with at the end of several months, or even years. Such instances are, however, exceedingly rare, yet we have seen one in a child nearly two years old, and another in one between the age of five and six. There is generally but a single tumour, but sometimes two or more exist, either in a state of communication with each other, or perfectly isolated.* They are mostly small, slightly prominent, smooth and soft upon the surface, and circumscribed by hard defined borders, which in a majority of cases, when examined with attention, are found hard and elevated, conveying the sensation of a hard bony ledge, surrounding the outline of the tumour, and an intermediate excavation, as though the outer table of the skull had been removed. Sometimes they are more diffused and flattened, and less clearly circumscribed; but even when extensive, the hard prominent border can be perceived, although it is less regular, and frequently presents prolongations and sinuosities run-

(15) Journal Universel et Hebdomadaire. September, 1833.

(16) Ibid. October, 1833. Also, Thése sur les contusions dans tous les organs. Paris, 1833.

(17) Siebold's Journal für Geburtshülfe.

* Nægele, op. cit. Also Zeller.

ning in different directions, occasioned by the unequal power of resistance presented by the integuments at different points, in consequence of which, they yield more readily to the distending force of the blood in some places than in others. In a few instances, however, it is said by Zeller and Nægele, that the hard elevated boundary is either entirely absent, or confined to a portion of the circumference of the tumour. In all cases, when they are properly developed, a distinct fluctuation can be perceived, and by making pressure upon the part, the point of the finger can be brought to bear upon the solid bottom of the cavity. The skin is seldom discoloured, but presents a pale, shining appearance, and in a majority of instances, the part is so little sensible, that considerable pressure may be made over it without occasioning much pain. In some few cases, when the fluctuation above alluded to is not so distinct, the tumour is soft and spongy to the feel, and difficulty may be experienced in deciding upon its nature.

The size of the tumour is exceedingly variable, and although it sometimes remains stationary from the time it is first observed, it occasionally increases progressively, until it attains a considerable volume. It may not be larger than an ordinary hazlenut; yet in some instances it attains the volume of an orange; and cases have been reported, in which it diffused itself over the whole extent of one of the parietal bones, or even the entire surface of the top of the head. In one of the cases which fell under our observation, the disease was seated over the course of the sagittal suture, and extended itself laterally, to each parietal protuberance; anteriorly, in front of the anterior fontanelle; and posteriorly, beyond the limit of the junction between the sagittal and lambdoidal sutures. Its dimensions, however, as previously suggested, may vary according to the duration of the disease; for although the tumour may exist anterior to the period of birth, as represented by Siebold, Osiander, Michaelis, Pigné and others, and present a well defined indurated border, it sometimes continues to increase for some time afterwards, until it attains a size much beyond that presented by it at the time of its first formation. This, however, can only happen when its barrier is formed by the soft parts, because when, as is sometimes the case, its boundaries are formed by bony deposite, the same facility of extension does not exist. Another circumstance deserving consideration in connection with these tumours is, that in a few

instances, a manifest pulsation can be perceived when the finger is applied to the part, shewing that the cavity of the tumour communicates with one or more arteries. This phenomenon is, nevertheless, comparatively rare, and has only been noticed by a few individuals. The same thing is sometimes met with in those sanguineous tumours which form in consequence of contusions inflicted upon the head.

It is a little curious, that these tumours are in almost every instance seated over the parietal bones, and in a majority of cases, on the right side. This has been remarked by nearly all the authors who have treated of the subject. Only a few cases have been reported, in which the disease occupied the frontal or occipital regions, and Diffenbach remarks, that he had never observed one in the temporal region, although Chelius speaks of such an event, and Velpeau observed a case, in which the tumour was spread over the left parietal and temporal, occipital, and the right parietal regions. Pigné has erroneously represented, that they are never found in the course of the sutures. This is contradicted by one of our own cases, in which the tumour formed over the sagittal suture; by one of Nægele's, in which it extended from one parietal region to the other; as well as by Velpeau's case just referred to. A very interesting case is also reported by Michel,* in which a large tumour of this kind, which presented a pulsation isochronous with that of the brain, was seated over the posterior fontanelle, and the right limb of the lambdoidal suture. Indeed, it may be affirmed, that the disease may form upon any portion of the head that is not covered by thick muscles, and even these latter situations cannot be considered as entirely exempt, since we occasionally meet with sanguineous abscesses, which are probably of the same nature, in other parts of the body remote from the head. Paletta† has reported many such examples, and others might be referred to.

These tumours, when opened, are always found to contain blood. This fluid, however, presents various modifications, according to the extent and duration of the disease, the condition of the soft parts and the bone, and the intimacy of the connection between the cavity of the tumour, and the small adjacent blood-vessels. It is sometimes perfectly fluid and of a florid colour, as though it had issued fresh from a divided vessel—frequently dark coloured, sometimes sanious, but in a large proportion of cases commingled with more or less serum, by which

* Gazette Medicale, Mars, 1833. † Op. cit.

it is rendered much thinner than natural. Sometimes, indeed, it is so watery, as nearly to resemble serum, tinged with the colouring matter of blood; and it is highly probable, that there is a near affinity between these bloody tumours, and some of those of a watery character, which are occasionally found in the same situation. The blood, it is reasonable to infer, becomes more and more deteriorated the longer it is confined, and should the disease be allowed to continue until the bony structures become involved, the fluid will be rendered still more unhealthy, and may acquire an offensive odour. It may even become divested of its sanguineous character, by suppuration taking the place of the hemorrhagic action, and converting the tumour into a purulent abscess. We could cite cases in confirmation of this statement, and amongst others, we might adduce the one reported by Michel, which has been already referred to.

As regards the precise situation of the fluid, and its relations with the component parts of the scalp, and the subjacent bone, much difference of opinion has been expressed. By Osiander, Nægele, Zeller, Carus, Chelius, and Pigné, it is affirmed that the fluid is always deposited between the pericranium and skull; Diffenbach thinks it lodged between the pericranium and the integuments of the scalp, in which opinion some other writers concur; while Velpeau, taking a more correct view of the subject, thinks it may occupy either of these situations, or be even more profoundly situated, in the diploë of the cranium, or between the dura mater and bone, as represented by Hoere. Our own observations induce us concur fully in this sentiment. In one of the cases which we had an opportunity of witnessing, the pericranium was not detached from the bone, but was much thickened, and the fluid was deposited between it and aponeurosis of the occipito-frontalis muscle. In another, we are inclined to think that it was superficial to this aponeurosis, and between it and the skin of the scalp. The cases in which it occupies the diploë, or rather commences in that structure, must be exceedingly rare, notwithstanding it was contended by Michaelis, that the disease always depends upon the destruction of the outer table of the bone, and that the collection of blood is a consequence merely of that affection.* He was probably misled in some cases, by the abrupt, prominent, indurated boundary referred to above, which from its uneven hard feel, he mistook for the rugged border of the diseased bone. But although he may

* Loc. cit.

have been deceived in this way, there are unquestionably cases of the kind represented by him, and many who have treated of the subject subsequent to his time, have committed an equal error, in denying the existence of such an affection. Some of them, it is true, have admitted that bloody tumours sometimes form in the diploë, but they affirm that there is no analogy between them and the disease under consideration. This sentiment has been expressed by Osiander;† and others have described such an affection of the diploë, as a disease altogether dissimilar in its nature. It differs, it is true, in some particulars, from the common sanguineous abscess of new-born children, as that disease has been generally described; yet when the pathological characters of the two affections are taken into account, we question much the propriety of considering them as entirely distinct. At any rate, we regard their affinities as sufficiently strong, to entitle them to be grouped under the same head, and we shall, in accordance with this view, and nearly in pursuance of the plan adopted by Velpeau, divide sanguineous abscesses, or tumours of the head, into five orders, according to the depth at which the fluid is situated.

a. *Sanguineous abscesses seated between the skin and the aponeurosis of the scalp.*—When the fluid is deposited between the skin of the scalp and the epicranial aponeurosis, as it is most superficial and least apt to become diffused, it forms the most simple of all the varieties of the disease, and does not involve any serious consequences. Such tumours are of more frequent occurrence than either of the other varieties, and may be easily confounded with others, which form in consequence of the pressure sustained by the head of the child during labour, or of injury inflicted by the forceps or other instruments employed to assist that process. These latter swellings, however, denominated by the German accoucheurs *caput succedaneum*, are very different in their nature, and may be easily distinguished by characters to be pointed out, when we come to speak of the diagnosis of the disease. As the union between the integuments of the scalp and the aponeurosis of the occipito-fontalis muscle is exceedingly compact and resistant, when the blood accumulates in this situation, it diffuses

* Loder's Journal fur Chirurgie, bd. ii. p. 660. Jen. 1799. And Hufeland's Journal, bd. iii. p. 81. 1804.

† Handbuch der Entbindungskunst, bd. ii. abth. 2. p. 214. Also in Abhandlungen und nachrichten, p. 235. 3. beschreib. tab. 1. fig. 5. Tubing. 1787.

itself with great difficulty, and such tumours are consequently, generally small, rounded, prominent, convex upon the surface, and surrounded by a well-defined hard elevated border, such as is felt in those bloody tumours which are so often produced by blows on the head. When the accumulation has existed for some time, the walls of the cavity become very much indurated, and sometimes acquire a consistence almost fibrous in its character. In this state, they do not suppurate readily, and after the bloody fluid has been evacuated, a kind of serous or lymph exhalation, either colourless or of a wine-lee hue, takes place into the cavity. As the deposite of fluid is not in a state of proximity with the bone, these superficial bloody abscesses are not apt to give rise to any serious consequences, and may be dispersed by proper discutient applications, or readily cured, by evacuating their contents. We witnessed a case of this kind a few years ago, in a youth of five or six years old, in consultation with our friend Professor Holbrook, of Charleston. The tumour, which occupied the parietal region was laid open and covered with a soft poultice, after which it healed from the bottom without any difficulty.

b. *Sanguineous abscesses situated between the aponeurosis of the occipito frontalis and the pericranium.*—It is more particularly to this variety of the disease, that Nægele and Zeller have appropriated the appellation cephalæmatoma; although, as previously remarked, they affirmed that the fluid is deposited between the pericranium and bone. We are inclined, however, to think with Diffenbach, that the affection to which their description applies, is seated between the aponeurosis of the muscle and the pericranium. There are here several circumstances to impress upon the tumour different characters from those which appertain to the first variety of the disease. The strong aponeurosis of the occipito-frontalis muscle is spread out upon a considerable portion of the top and lateral parts of the head; it is so loosely attached by cellular tissue to the pericranium beneath, as to glide upon it with great freedom; and the proximity of the disease with the surface of the bone, renders it much more liable to give rise to serious consequences, than when it is situated more superficially. In proportion as the blood accumulates beneath the aponeurosis, it is resisted by it in its tendency to protrude towards the surface; but in the direction of the circumference, it dissects up the loose cellular tissue which unites the aponeurosis to the pericranium with great facility, and diffuses itself extensively

between the two structures, and over the surface of the head, until its further progress is arrested by a solid barrier, in form of the indurated border already adverted to, which is set up by the process of adhesive inflammation. In consequence of these conditions, such tumours are more flattened and expanded than the preceding, less prominent, and very often less accurately defined; for although they are generally limited by the hard prominent boundary described, this is not constantly the case, and instances sometimes occur, in which, as represented by Nægele and Zeller, no such barrier exists, or if it is present, it is confined to a limited portion of the circumference of the collection, so that the fluid may continue to diffuse itself where it meets with the least resistance, until it becomes spread out, irregularly, over a large extent of the top or lateral part of the head. The interposition of the aponeurosis, likewise, renders the fluctuation more obscure, and when the fluid is allowed to remain too long, the same influence disposes the mischief to extend to the pericranium and bone, and to give rise to caries and exfoliation of the latter, and sometimes to the death of the patient. Before these changes are induced, others takes place in the structures which form the immediate walls of the cavity. They become thickened and indurated; undergo, in protracted cases, considerable transformations of texture, acquire an imperfect pseudo-membranous lining, and occasionally take on the character at some points, of fibro-cartilage, or even bone. In a very afflicting case which we recently had occasion to attend in consultation with our friend Dr. Steuart, and which terminated fatally, the abscess had the tendinous aponeurosis of the occipito-frontalis muscle spread over its surface, and was diffused over nearly the whole top of the head. The inner surface presented an uneven mammillary appearance, apparently produced by a compact, yet somewhat spongy, vascular substance, apparently of adventitious development. The cavity was likewise lined by a thin adventitious membrane, such as forms in common abscesses of long standing, upon which the vessels of the new substance just adverted to seemed to ramify. The aponeurosis could be distinctly traced over the whole surface of the tumour, and to its lower face, the peculiar product which formed the principal part of the walls of the cavity adhered very intimately.

It is this mamillary texture, that in more advanced cases sometimes becomes transformed into a kind of ligamentous, fibro-cartilaginous, or even a bony texture; and cases have

been reported, in which the last transformation was observed upon the cranial surface of the cavity at birth, or a very short period subsequent, thus corroborating the opinion of Siebold, Osiander, Michaelis, Pigné, and others, that sanguineous tumours, in some cases at least, form anterior to the time of delivery. The hard prominent contour which so generally surrounds the whole circumference of the tumour, is also sometimes of a bony consistence; and if we are to believe the assertions of Michaelis, Nægele, Zeller, and many others, it very generally presents this character. We are inclined to think, however, that their inferences have been drawn more from the sensation imparted to the touch, than from absolute dissections, and that although it is sometimes osseous, it is far more frequently a mere condensation, or consolidation, of the adjacent tissues. This is rendered probable by the facility with which it disappears after the tumour has been opened, which would not be the case, if it were of an osseous consistence. It should nevertheless be remarked, that the aponeurosis of the occipito-frontalis muscle sometimes becomes ossified, converting it into a thin bony arch, extending over the whole surface of the abscess, which is situated beneath. The only well authenticated case of this kind which we have met with, is one reported by Chelius.* He represents, that the *pericranium*, which was elevated by the tumour, when pressed, imparted to the finger the sensation of an elastic metallic plate, and a manifest feeling of crepitation. The pericranium, which is here represented to have been the seat of the transformation, could not have been separated and elevated from the bone to such an extent, without rupture, consequently, could not have been the part involved in the change. It is much more likely, that the part affected was the tendinous aponeurosis of the muscle, the situation and texture of which would render it much more liable to experience such an alteration. The case, at all events, is one of great interest, since it shows how an affection of this kind might be readily mistaken for a disease having its origin in the diploë of the skull, and separating the outer from the inner table of the bone. It is indeed not improbable, that both Michaelis and Osiander may have been deceived in this manner, in some of the cases which they have reported.

As the pericranium, in this variety of the disease, is interposed between the fluid and the bone, the latter does not generally become much affected, except where the tumour has existed for a

* Handbuch der Chirurgie, bd. ii. p. 193. Leipsig, 1829, and Heidelberg. Klinisch. Anallen, bd. iv heft. 4.

long time, and an early opening is not made to evacuate the blood. The protective influence of the pericranium is, indeed, sometimes augmented, by its acquiring increased thickness, and undergoing other changes. Still the outer table of the skull is occasionally affected with necrosis or caries, and if the disease be allowed to continue, the walls of the cranium may be completely perforated, exposing the parts within, and imparting to the disease a fatal character. Michaelis, as has been previously remarked, pretended to have found disease of the bone in all cases; but although he was certainly wrong in making this sweeping inference, several such cases, well authenticated, have been reported by others, some of which no doubt, were examples of this variety of the affection.

c. *Sanguineous abscesses between the pericranium and the bone.*—It was remarked above, that Osiander, Nægele, Zeller, Carus, Chelius and Pigné, considered this the proper seat of the abscesses in question in all cases; at least, only a few of them admit that the fluid may be deposited elsewhere. Velpeau, on the contrary, influenced by the intimate connection of the pericranium with the bone, and its liability to rupture, rather than yield to the distending influence of the accumulation, thinks this form of the disease must be exceedingly rare, although he does not deny its existence. We have no doubt that many of the cases supposed by the individuals, whose names have been mentioned, to be of this character, were examples of the variety last described; yet when we consider the numerous minute vessels which pass from the pericranium into the substance of the bone, we can easily conceive, how sanguineous deposites may form here, more readily than supposed by Velpeau. Such a variety of the disease would of course be much more formidable than either of the preceding, because of the immediate contact of the fluid with the denuded bone, and the almost inevitable implication of the latter in necrosis or caries in consequence of these relations, especially when the fluid is not early absorbed, or when a timely puncture is not made to allow it to escape. Some of the cases observed by Michaelis may have been of this kind, and it is highly probable, that in many of the examples observed by Paletta, Osiander, Nægele, Zeller, Chelius, Diffenbach, and others, in which the bone was found diseased, the fluid was deposited between the pericranium and the bone. Still, it does not necessarily follow, that this was the case in all of them; because, the bone may likewise become affected in some of the other varieties of the disease. The extent to which the bone may be

involved in such cases, is variable. Sometimes the affection is very slight, consisting, merely, of superficial caries and exfoliation; occasionally the outer table becomes necrosed and is thrown off; and in some rare instances, the entire thickness of the skull is detached, and exposes the dura mater beneath. Examples of this kind have been reported by authors, and were it necessary, several, which terminated fatally, might be referred to. It is evident, that much difficulty would be experienced, during the life of the patient, in distinguishing this variety of the disease from the preceding, or even from that which originates in the diploë. Fortunately, this is not often a matter of much moment so far as the first is concerned; but it may be sometimes important to discriminate between this form of bloody tumour and those which form in the diploë, because, as we shall have occasion to explain, there are some of the latter, which it would be unsafe to puncture.

d. *Sanguineous tumours of the diploë of the skull.*—It may admit of a question, how far bloody tumours which are developed in this situation, agree in their fundamental characters with those described above. Michaelis affirmed, that the affection which is the special subject of these observations, always consists in a destruction of the outer table of the cranium by necrosis or caries, and that the accumulation of blood beneath the pericranium is a consequence merely of this condition. Osiander likewise, while he objects to the inference of the author just quoted, alludes to a form of bony tumour of the cranium, which is sometimes congenital, in which a morbid growth takes place in the diploë, altering the structure of the outer table, and elevating that portion of the bone, but never destroying it.* Chelius, however, in considering these cases, remarks, that the first has been mistaken by those who have observed them, and that although apparently situated in the diploë of the bone, they in reality occupy the space between it and the pericranium, and what was mistaken for the outer table was the pericranium in a state of ossification. We can conceive such a mistake possible, yet there is incontestible evidence that tumours of the kind do sometimes form in the diploë, and give rise to all the consequences that have been attributed to them. Still the question recurs, are they identical in their nature with those which form in the tissues of the scalp, and between them and the bone? They certainly agree in some of their characters, yet in others they present a

*Handbuch der Entbindungskunst, bd. 2, th. 2, p. 214.

marked contrast. Both tend to destroy the bone; both may exist at birth or form shortly afterwards; and both are filled with blood; yet when those of the scalp are laid open, they do not continue to bleed after their contents have been discharged, while some of those of the diploë, under the same circumstances, pour out blood so copiously, as to endanger or destroy the life of the patient. The organization of the diploë explains, to a certain extent, this striking peculiarity. The reticulated structure between the two bones, is not only supplied abundantly with arteries, but as has been demonstrated by Dupuytren and Breschet, is likewise traversed by numerous veins of large size, which anastomose freely with each other, and form an intricate venous plexus within the bony texture. These vessels communicate freely by numerous small branches through the two tables of the skull, with the vessels of the scalp on the one hand, and on the other, with those of the meninges, and also with the great sinuses of the latter. We apprehend, therefore, that most of the bloody tumours which form in the diploë, have their origin in a kind of varicose condition of these veins; that in proportion as the tumour increases in size, the tables of the bone are forced asunder or destroyed; that they are, in short, proper erectile, or aneurismal tumours, and owe to this circumstance their faculty of pouring out blood to such an alarming degree when opened. We could refer to numerous cases reported both by the early and recent writers in confirmation of this view; and if all the examples which have been recorded under the appellation of fungus of the dura mater, hernia cerebri, &c. could be carefully analysed, it is probable, that many of them would be found to be instances of erectile tumours, or aneurisms developed within the diploë of the skull. This affection of the bones of the head has not, so far as we know, been properly described by writers; but tumours of the kind are not peculiar to this class of bones: they likewise form in the bones of the trunk and extremities, and the records of the science contain numerous examples, the nature of which has not until recently been understood. To this class ought probably to be referred the cases reported by Fabricius Hildanus,(1) Ruysch,(2) Pearson,(3) Else,(4) Lassus,(5) Freer,(6)

(1) Observat. et curat. Chirurg. Cent. ii. Obs. xxvi.
(2) Observat. Anat. Chir. Observ. lxxxi.
(3) Medical Communications. Vol. xi. p. 95. 1700.
(4) Medical Observations and Inquiries. Vol. iii. p. 169 1769.
(5) Pathologie Chirurgicale, tome i, p. 489.
(6) On Aneurism, p. 28.

Boyer,(7) Pelletan,(8) Scarpa,(9) Lallemand,(10) and several by Breschet,(11) the last of whom has published a very able memoir on the subject of sanguineous tumours of the bones. Some of the cases reported by Pelletan ought, perhaps, to be included under the same head,(12) but as our observations are intended to be confined to those which affect the head only, we shall not discuss this point.

Assuming the proposition, that a majority of those sanguineous tumours which are developed in the diploë, consist of a dilated condition of the venous or arterial plexus of that structure, we can easily comprehend why they bleed so profusely when punctured; the free communication between these veins and the great sinuses of the brain, as well as their intimate connection with numerous other vessels, being amply sufficient to account for this hemorrhage. The great facility, moreover, with which these veins become distended, the enormous extent to which they are capable of being dilated, and the encroachment which they must consequently make, when thus affected, upon the tables of the skull, and after these have been destroyed, upon the scalp, the meninges, and the brain itself, likewise explain the general phenomena of the disease and its fatal tendency. Should the outer table of the cranium first give way, the tumour will protrude outwards, and may attain a very great size, by forcing the pericranium and scalp before it; and in some cases of this kind, especially when the inner table of the bone is likewise destroyed, the tumour will present a pulsation isochronous with that of the brain. A pulsation is, moreover, sometimes perceptible, even though the brain may not be exposed; but this pulsation corresponds with that of the arteries. Should the inner table of the skull give way first, or yield more readily than the external, then the tumour, by protruding inwards, will encroach upon the brain and its coverings, and give rise to convulsions, paralysis, and death. Sometimes, indeed, when the walls of the cranium become completely perforated, and the tumour attains a considerable size, it assumes all the appearances of congenital hernia cerebri, may, like that disease, be forced into the cranium by pressure, and cannot be easily distinguished from it.

(7) Traité des Maladies Chirurgicales, tome iii.
(8) Clinique Chirurgicale, tome ii. p. 14.
(9) Sull' Aneurism.
(10) In Breschet Repertoire d'Anat. et de Physiologie, tome ii. p. 137. 1826.
(11) Ib. p. 142—178. From this, we select the above references.
(12) See Exercitationes Pathologicæ, Pars ii. 188—213.

In some instances, however, the diseased growth does not succeed in breaking up the bony tables, but forces them asunder, and forms for itself a bed in the interstice. An interesting case of this kind is reported by Velpeau, on the authority of Lauth. It was that of a young man, who received a blow with a cane on the parietal region. The immediate effects subsided in a few days, but two months subsequently, he was seized with violent pains at the opposite point, and the trepan was applied, without discovering any thing. On examination after death, which speedily followed the operation, a flattened fungous mass, of the size of a nut, was found encysted, as it were, in the diploë corresponding to the point upon which the blow had been received.*

e. *Sanguineous tumours which form between the cranium and dura mater.*—That variety of these tumours which has received the appellation of fungous of the dura mater, has been more particularly described than either of the preceding. Yet there are many affections to which this term is applicable, that do not fall within the scope of our observations, they being of a character entirely different from those tumours which it is our object to describe; nor does it comport with our plan, to consider those extravasations of blood, which take place in this situation in consequence of violence inflicted upon the head. Velpeau, however, seems to think, that deposites of blood not unfrequently form at this point during labour, and subjoins that he had himself witnessed two examples. If the assertion of Cruvielhier be well-founded, that at least one-third of those infants, which, healthy and vigorous previous to delivery, die of apoplexy during that process, the opinion of Velpeau would seem to be entitled to confidence.

It is likewise possible for erectile tumours, analogous to those already described, to have their origin in the space between the cranium and dura mater, and it is highly probable, that many of the cases which have been described as examples of fungous of the dura mater, and congenital hernia cerebri, were instances of such erectile tumours. In some rare instances, those tumours have been found in a state of communication with the sinuses of the brain internally, and with the scalp externally, through one or more apertures in the cranium. A very singular case of this kind has been described by Dr. Flint.† It was in a child three weeks old, upon the posterior portion of the head of which, a circum-

* Journal Universel et Hebdomadaire. Octobre, 1833.

† New England Journal of Medicine and Surgery. Vol. ix. p. 112. 1820.

scribed fluctuating tumour was discovered, of the size of a pullet's egg, which, increasing in size, and threatening to rupture, was punctured with a lancet. Blood flowed from the puncture, and in a few minutes it ceased to bleed; but hemorrhage took place from the part at intervals, during the ensuing night, which could not be suppressed, and the child died from loss of blood. On laying open the scalp, a dense coagulum of blood was discovered, covering the occipital bone, and thinly spread beneath the expansion of the occipito-frontalis muscle. The middle of the occipital bone was found denuded, rough, and spongy, to the size of a cent piece, and was perforated immediately under the base of the tumour, and opposite the point at which the longitudinal divides to form the two lateral sinuses, by several small apertures, through which blood was made to flow freely by compressing the head. From this it appears, that the tumour was fed, through these openings, by the sinuses of the brain. Dr. Flint thinks, that the disease of the bone existed before the formation of the tumour; but this is not very probable, and it is much more likely that the tumour had its origin in a varicose state of the blood-vessels, which traversing the bone, impressed upon it the alterations presented by it after death.

A case is also described by Busch, which was observed in a child that had been some time dead and was delivered with the forceps. Situated over the occipital region was a bluish coloured bloody tumour, which, when it was opened, was found to communicate with the sinuses of the brain.* One is likewise reported by Hoere,† in which there were two tumours; one internal between the dura mater and the bone, the other between the latter and the pericranium, with a diseased condition of the intermediate portion of the cranium. The internal tumour was of the size of a pigeon's egg, and had formed for itself a kind of depression in the corresponding portion of the brain. The internal table of the bone, opposite to it, was diseased, and destroyed to some extent, but the process of reparation had commenced. The outer table was entire, and unaltered.

These are the principal characters and varieties of this peculiar form of disease. The influence exercised by it over the general health must of course be variable, according to the condition of

* Heidelberg. Klinisch. Anallen, bd. ii. p. 245.

† De tumore cranii recens natorum sanguineo et externo et interno, &c. Berol. 1824.

the tumour, its relations with the adjacent parts, and the susceptibility of the organization. Very generally, there is little or no constitutional disturbance observed during the first stages of the disease; but after the tumour has continued for some time, the child is apt to become pallid, feeble, and heavy; it loses its natural sprightliness; has its digestive organs more or less disturbed; is restless and uneasy, especially during sleep; and in some cases, is affected with flushing of the face, and irregular febrile exacerbations. Gœlis remarks, that even in a recent case, he found the child affected with a kind of confusion or stupor; and it not unfrequently happens, after the disease has made considerable progress, that various nervous symptoms make their appearance, which arise either from the direct influence of the tumour on the brain, or from irritation excited by it being reflected upon the nervous centres. These symptoms may vary, from slight twitchings, to violent convulsions, or even paralysis. Such cases are generally attended with active febrile excitement, associated with the phenomena of arachnitis or inflammation of the brain. It should be remarked, however, that these phenomena are seldom or never observed until towards the last stages of the disease, and it is likewise only at this period, that evidences of compression of the brain, and inflammation of the dura mater become apparent; these symptoms owing their existence in such cases to the diseased changes which take place in the bone and the adjacent structures. In some instances, nevertheless, the ravages of the affection are more insidious in their march, creating but little disturbance until a considerable portion of the bone has become destroyed, and allowing extensive perforation of the skull to be produced before death takes place. Paletta, Nægele, Osiander, Kopp and others have observed cases of this kind. But while some examples of the disease are attended with some or most of these symptoms, there are others, which, until they are far advanced, give rise to no uneasiness or derangement, either general or local. Yet it may be laid down as a general rule, that whatever may be the condition of the patient during the first stages of the disease, the constant tendency is to a fatal termination, if the fluid be not absorbed, or evacuated by art.

3. *Causes and nature of the disease.*—Those who have had occasion to observe sanguineous tumours of the head of newborn infants, have found it difficult to assign any satisfactory cause for their development. From some characters which they possess, in common with those bloody tumours or ecchymoses

which form in the same situation in consequence of contusions, writers for a long time adopted the opinion, that they owe their origin to some injury sustained by the head of the child during labour, either from pressure within the straits of the pelvis, from the contusion occasioned by the forceps or vectis, or some analogous cause. This opinion has been perpetuated by the neglect of many to discriminate between the proper cephalæmatoma, or spontaneous bloody tumour, described by several of the German authors, and those which are in reality only examples of ecchymosis produced by violence. This cause has been assigned by several respectable practitioners, amongst whom Diffenbach enumerates Becker, Carus, Capuron, Wendt and Osiander, and we may add to this list Velpeau and several others of high respectability. There are several circumstances which invalidate such a conclusion.

The tumours in question are not oftener met with in difficult labours, and those in which instruments are employed, than they are after easy and quick deliveries. Palletta* remarks, that he had never seen them after difficult labours. Nægele, who observed seventeen cases in the course of twenty years, declares, that in a large proportion of them, the labour was easy, and the tumours occupied those parts of the head that was least liable to be compressed or injured in its passage through the pelvis. He observed, besides, one case, in which the child was delivered by the feet, and others have been reported which occurred in breach cases. Siebold never saw them after difficult labours; Baudelocque seldom, and such, likewise, is represented to have been the result of the experience of Feiller, Hoere, Michaelis and Schmidt.† To this it may be added, that bloody tumours of a similar character occasionally form on the head of children at a more advanced age, and sometimes even in the adult, when no injury whatever has been inflicted. In neither of the cases which we have had an opportunity to observe, could the disease be referred to this cause, inasmuch as after the strictest inquiry, it could not be ascertained, that the subjects of them had received either blow or contusion, or any other injury upon the head. It is besides known, that sanguineous abscesses occasionally form in other parts of the body not exposed to the influence of violence. Paletta has reported many such examples, and several

* Op. cit. 123.

† Pigné, Journal Hebdomad. Sept. 1833.

others might be referred to, which have been published by different individuals.

These facts prove conclusively, that the disease cannot be properly attributed to the cause referred to above. Injuries of the kind alluded to may unquestionably give rise to extravasation of blood in the scalp, but it will be found on examination, that such tumours differ essentially from those which form the subject of these observations. They are attended with more or less discolouration of the skin; they disappear in the course of a few hours, and are not attended with the hard elevated boundary which generally circumscribes sanguineous abscesses of the head. That the long continued resting of some part of the head of the child upon the brim of the pelvis, before labour comes on, may sometimes predispose to the affection, we will not deny, yet this is a different question from that under discussion.

The hypothesis of Michaelis already alluded to; that the disease has its origin in the destruction of the outer table of the cranium, and that the collection of blood is a consequence merely of that affection, is refuted by so many facts, that it cannot be necessary to do more than advert to it. It should nevertheless be remarked, that when the tumour has its origin in the diploë, no collection of blood takes place in the scalp, until this destruction of the outer table is accomplished. But while this is admitted, it only proves, that the injury of the bone is a consequence, and not the cause of the disease. Nor is the conjecture of Baudelocque, that the extravasation of blood is a salutary act, the effect of which is to protect the brain from dangerous congestion or apoplexy, entitled to more confidence. Nægele at one time attributed the origin of the disease to a varicose state of the emissary vessels of the cranium, in consequence of which they become ruptured during parturition; but he afterwards abandoned this opinion as untenable. Pigné also seems to think they are owing to a rupture of blood-vessels, but he affirms that this rupture takes place spontaneously. In proof of this, he appeals to the authority of Baudelocque and Cruveilhier, who remark, that fœtuses are often destroyed by a vessel giving way within the cranium, even before the period of delivery.

Amidst these conflicting opinions, it is exceedingly difficult, without more positive data than we possess, to arrive at any very satisfactory conclusion.

4. *Diagnosis.*—The affections with which these tumours are most frequently confounded are, the extravasations of blood in

the integuments of the cranium, or the puffy ecchymosis of those parts, which form in consequence of injury sustained during labour, and which the Germans have denominated *caput succedaneum.* It is by neglecting to distinguish them, that many writers have been led into the error of attributing them all to contusions inflicted upon the head of the child in the act of delivery. A proper attention to the symptoms peculiar to the two affections, will render it easy to avoid mistaking one for the other. In the *caput succedaneum*, or tumours which proceed from contusion, there is a kind of infiltration of blood mixed with serum; the tumour is diffused, presents a dark livid colour; is œdematous and pits on pressure; is devoid of the well defined border which circumscribes the proper sanguineous abscess, and does not present the pulsation which sometimes exists in that disease. In some cases, however, especially when the fluid is deposited between the aponeurosis and the pericranium, or between the latter and the bone, the diagnosis will be more difficult. Still, the surrounding œdema, the absence of the prominent defining barrier, the discolouration of the skin, &c. will generally furnish sufficient data to prevent, in a great degree, an erroneous conclusion. The same marks will serve to distinguish sanguineous tumours from those containing water, which sometimes form in the same situation. Purulent abscesses may be generally distinguished by the inflammation, redness, great tenderness, and other symptoms with which they are almost always associated.

If in accordance with the plan we have adopted, bloody tumours of the scalp, and those of the diploë and parts beneath, be grouped together, it is probable that the same explanation will not hold good in reference to the formation of the whole of them. At least, there may be a slight difference in the pathological condition of the superficial and deep seated tumours,—although it may not be sufficiently great to constitute them totally distinct affections. And it may be remarked, that those which form in the diploë cannot well take place in the fœtal head, inasmuch as at that early period of life, the two tables of the cranium are so close to each other, that the diploë scarcely exists. Whatever may be the difference in the seat of the disease, there can be but little question that it consists primarily in a morbid condition of the capillary blood-vessels, and the cellular tissue through which they ramify. All who are conversant with the laws of the animal economy are aware, that under the influence of certain grades and modifications of irritation, the vessels pour out blood, instead

of coagulable lymph, serum, pus, or any of the other products which they deposite under different degrees of the same process. It is difficult to determine, however, whether the collections in question have their origin in this manner, or whether the radicles of the veins, at the points at which the arteries inosculate with them, do not first assume a varicose condition, such as they present in erectile tumours, and afterwards give way, extravasating their contents in the meshes of the cellular tissue. We are inclined, from the general phenomena of the disease, to infer that both these explanations are correct, though applicable to different cases. The first is certainly the most rational, when applied to those tumours which are superficial; yet there are others in which it seems incompetent to explain all the phenomena. This is especially true of those which form between the pericranium and bone, and in the diploë of the cranium. It has been remarked above, that in some cases, a considerable pulsation or thrill can be felt in the tumour during its early stages, which disappears as the disease progresses. This cannot be very well explained upon the supposition of a mere hemorrhagic action of the capillary vessels, but is in every respect analogous with the phenomena presented by erectile tumours. The reason why the pulsation disappears at a later period probably is, that the delicate vessels being over distended, their tunics give way, and extravasate their blood, and afterwards undergo such changes, as to destroy their pulsation. Such dilatations we conceive may take place in either the arterial or venous portion of the anastomosing vessels, or in both, precisely as the same thing is observed in erectile tumours in other parts of the body. But if this explanation is probable as regards those tumours which form exterior to the cranium, it is unquestionable when applied to such as are developed in the diploë. The cases reported by Flint, Hoere and Busch, which have been already referred to, were probably of this kind, and the very valuable memoir of Breschet, previously quoted, contains numerous examples of erectile tumours or aneurisms, affecting other bones. Here the vessels are more protected by the bony casement in which they are lodged; the process of dilatation goes on more tardily, and they do not so soon give way. Hence, such tumours, when opened, generally bleed profusely, because the affected vessels have not yet had time to undergo those changes which are so speedily effected in soft parts, and which disqualify them, in the latter situation, from pouring out blood so freely.

Be this as it may, the cellular tissue also undergoes important modifications. It is destroyed, or has its meshes forced asunder at the point at which the extravasation takes place, while in the vicinity, coagulable lymph is deposited in its areolar arrangement, and becoming organized, sets up a barrier against the diffusion of the fluid, which forms the indurated circle or boundary already alluded to. This is precisely what takes place in common purulent abscesses, and it will be found, on examining the cavity of one of these bloody tumours which has existed for some time, that it, like a common abscess, is lined by a complete adventitious pellicle or membrane, which is either very vascular itself, or has a complex intertexture of minute blood-vessels ramifying exterior to it. This membrane may pour out blood, or serum, or pus, according to the degree of irritation which may happen to exist in the walls of the tumour; and all these fluids may be deposited by it in the course of the disease. Hence, when such a tumour is laid open shortly after it has formed, it generally discharges pure blood; at a later period blood and serum will often be evacuated, and if it be allowed to remain unopened, it may become the seat of a purulent deposite, as in Michel's case, to which we have referred above.

Assuming these as the pathological conditions of the disease, it is not easy to explain the causes which dispose the parts to take on such changes or modifications of action. It is possible that the resting of the head of the child upon the bony parts of the brim of the pelvis, during the last weeks of gestation, may be the cause in some cases; and that in others, the pressure it experiences during labour, may excite sufficient irritation to produce the disease. Many other circumstances may have some instrumentality, but as any remarks we could make in regard to them would be purely conjectural, we shall not enumerate them.

Much more difficulty will be experienced in distinguishing sanguineous tumours from congenital encephalocele, or hernia of the brain. Owing to the uncertainty of the diagnosis between these two affections, they have been often confounded, more especially by some of the earlier writers on the latter of these two diseases, who described cases as examples of encephalocele, which, from their own representation, we cannot avoid concluding were nothing more than instances of sanguineous abscess. This mistake was committed, as Nægele and others have remarked, by Le Dran and several of his successors, especially Trew, a writer in the Gentleman's Magazine, Detharding,

Chemin, Corvinus, Gaspard Siebold, Held, Salleneuve, Thiernig, Ohme, Held, Breiting, Richter, Rosen de Rosenstein, Bernstein, Fleisch, Plenk, Schmalz, Henke, &c. A reference to all these authorities will shew, that they considered the parietal region as the most common seat of congenital encephalocele, while it is well known to all practitioners of the present day, who are conversant with such affections, that they are seldom developed, except in the course of the sutures, at the anterior or posterior fontanelle, or in the situation of some of those points which, during the first periods of the ossification of the cranium, are not supplied with bone. This fact then, together with one adverted to in a preceding part of these observations, that sanguineous abscesses are developed by far more frequently over the parietal bone than upon any other part of the head, renders it highly probable, that a very large proportion of the cases considered by writers as examples of what they called *lateral* congenital encephalocele, were nothing more than sanguineous tumours of the parietal region.

The difference observed in the locality of the two affections may afford some assistance in distinguishing them, but cannot be regarded as affording sufficient grounds for a positive diagnosis, since, as has been remarked, sanguineous tumours are sometimes developed in the course of the sutures, and upon other points which are liable to hernia of the brain. Far better criteria may be deduced from the phenomena furnished by handling the tumour, from the condition of its surrounding boundary, &c. Both are soft and spongy to the feel, and impart to the touch the sensation of a depression or defect of the corresponding portion of the cranium. Both are likewise often attended with pulsations which are isochronous with those of the heart; and in the one, as in the other, a hard well-defined border can be generally felt, which surrounds the entire circumference of the tumour. Thus far they seem to agree in most of their characters; but if these phenomena be carefully analyzed, it will be found that there are many points of difference. Thus, when pressure is made on a congenital encephalocele, the tumour can be often forced down through the opening by which it protrudes through the cranium, upon the substance of the brain; but so soon as this is done, the individual will be affected with vertigo, dimness of vision, loss of consciousness, or even convulsions. Sanguineous tumours cannot be made to disappear by this procedure, nor do they, when compressed, give rise to the symptoms alluded to. If the march

of the disease be carefully observed, there can be no danger of the hard prominent boundary leading to an erroneous diagnosis, inasmuch as in encephalocele, it must always exist before the tumour can protrude,—the destruction of the entire thickness of the bone being necessary, to allow this event to take place; whereas in the case of the other affection, the tumour always forms first, and the hard boundary, or as it has been generally called, the bony circle, is only developed in consequence of the influence exercised subsequently upon the adjacent portion of the bone. Besides, when pressure is made upon the centre of the tumour, if it be encephalocele, the finger will pass down without meeting with any solid resistance, while in cases of sanguineous tumours, it is soon arrested by the solid rough surface of the bone. Although pulsation is a character common to both affections, it is feeble in sanguineous tumours, and is only present during the earliest periods of their existence, whereas in encephalocele, it is much stronger, and never entirely disappears.

There can seldom be much difficulty in distinguishing sanguineous tumours from fungus of the dura mater, the latter being destitute of fluctuation, and when forcibly compressed, giving rise to those symptoms which indicate pressure on the brain. Erectile tumours, however, developed either upon this membrane, within the diploë of the cranium, or between the bone and the pericranium, cannot be so easily distinguished, either from simple bloody abscesses, or common fungus of the dura mater.

5. *Treatment.*—The treatment of sanguineous tumours of the head may be attempted by two different methods. The first has for its object the dispersion of the tumour by promoting the absorption of its contents; the second, the evacuation of the blood by puncture or incision.

The first method should always be fully tried previously to resorting to the second. Experience has proved satisfactorily, that a large proportion of these tumours will either disappear spontaneously, after the lapse of some time, or may be dispersed by proper local treatment; and as long as any hope of obtaining this result remains, an operation should not be performed. Nearly all writers on the subject have reported many such cases, and in the memoir of Zeller already referred to, a great number will be found. Out of seven cases observed by Beyerle, six were cured in a few days by aromatic vinous fomentations, and it was only necessary to open the tumour in one. Even tumours of very

large size may be sometimes dispersed. Zipp reports a striking example: He was called to visit an infant, aged four days, upon the left parietal region of which he found a cephalæmatomatous tumour, as large as an adult fist. It was discovered on the day of delivery, from which time it had continued to increase, but did not seem to affect the health of the child. The mother was healthy, and had had an easy delivery. By means of frictions with aromatic substances, practised night and morning, the tumour was completely dispersed in about four weeks.*

The choice of applications should be regulated by the condition of the part affected, and of the general system. When the child is vigorous, and the scalp, as well as the constitution in general, highly susceptible, antiphlogistics should be preferred. It may be necessary sometimes to apply leeches, and even to repeat them according to circumstances; and in all such cases, cold antiphlogistic discutient lotions may be employed with more or less advantage. The best of these will be the liquor plumbi subacetatis, vinegar largely diluted with water, a solution of either the acetate or muriate of ammonia, or any of the ordinary evaporating lotions. The hair should be closely shaved, and a fine fold of linen kept applied to it constantly, wet with the preparation employed. Ice may likewise be occasionally resorted to, but is not often so efficacious as the remedies just enumerated. Indeed most of the German authorities seem to think, that applications of a somewhat exciting character should be generally preferred, their stimulating properties being thought necessary to promote the absorption of the fluid, and produce healthy action in the part. Hence, they recommend aromatic vinous and spirituous infusions and decoctions, stimulating lotions and unguents, and other articles of a kindred character, either applied lightly to the scalp, or administered in form of frictions. When there is great languor and deficiency of energy in the tumour, and in the system generally, such applications are certainly demanded; yet it must not be concealed, that under an opposite state of affairs, they may prove highly mischievous. We are inclined to think, that the application of the warm decoction of oak bark, cinchona, &c. or frictions with mercurial ointment, which have been recommended by Diffenbach, can seldom or never be admissible. Nor do we think that it will be generally safe to keep up pressure by means of a compress and bandage as

* Pigné, loc. cit.

recommended by Chelius, although we apprehend that cases do occasionally occur, in which it may be both safe and beneficial.

These means, properly employed, will often disperse the tumour, and effect a perfect cure of the disease. Yet they will sometimes fail, and it will then become necessary to adopt a different course.

It is extremely difficult to decide how far the treatment can be safely confided to those means, the object of which is to obtain the discussion of the tumour, inasmuch as in some cases, the disease has been allowed to continue for weeks or even months, without giving rise to any very serious consequences, while in others, the cranium has become affected with necrosis or caries after the lapse of a very short period. This being the case, much injury may sometimes result from relying too long upon discutient applications, and neglecting to evacuate the fluid by a proper opening. Zeller reports a case corroborative of this principle. A child was born with a very large sanguineous tumour seated upon the left parietal region, the character of which was not understood by the surgeon in attendance, and it was consequently left to the unassisted efforts of nature. The tumour continued to increase in size, became painful, the health of the child suffered considerably, and after the lapse of some weeks, death took place. The bone was found carious, and perforated by a number of small foramina, which traversed its entire thickness.* In order not to incur the risk of these mischievous consequences, it will be advisable, when the ordinary local applications have been employed ineffectually, for eight, ten, or fourteen days, to puncture the tumour and evacuate its contents, lest by suffering the fluid to remain too long in a state of confinement, it may occasion disease of the bone, or the health of the child may become endangered by the influence of the disease upon the general system. Upon this point, then, a perfect unanimity of sentiment exists, amongst all who have written on the subject. Some have even advised that an opening should be made as soon as the tumour is discovered, and Osiander thought it should never be delayed beyond twenty-four or forty-eight hours. But to this practice there are two objections. One is, that there are many cases that disappear spontaneously, or may be cured by local applications; the other, that the parts are more vascular during the first periods of the disease, the blood more fluid, and hemorrhage is more apt to take place from the cavity.

* Pigné, loc. cit.

There is some difference of opinion as regards the manner in which the contents of the tumour should be evacuated; some giving the preference to the seton, some to puncture and incision, while others advise the caustic. The seton was long since recommended by Moscati; and Palletta advocates its employment in preference to all the other methods. He represents, that it is unsafe to open such tumours by a free incision, but that when they are transfixed by a seton, a cure is easily accomplished without any bad consequences. Notwithstanding this authority, the practice has been abandoned, and has been by some writers very justly condemned.

Gœlis advises a stick of caustic to be rubbed upon the surface of the tumour, with the view of promoting suppuration, and exciting the requisite degree of action in the parts. The same plan has been recommended by Schmidt. Of all the means proposed, we hold this to be the most objectionable, and we doubt not, that if generally pursued, it would often occasion serious mischief. In this opinion we are supported by all the best authorities, who, with great unanimity, concur in condemning such a procedure.

Osiander recommends an incision of an inch in length, and down to the bone, to be made with a convex bistoury, in a direction transverse to the course of the ossific radii of the parietal bone. The object of the last rule is, to avoid the danger of inflicting injury upon the brain, by the knife penetrating between these rays, which it might do, if the incision should be made parallel with them. For the same reason, he directs that a lancet, a sharp pointed bistoury, or a trocar, should never be employed for such a purpose, because there is a great risk of puncturing the brain, on account of the extreme thinness of the bone. In prudent hands these precautions can scarcely be necessary, nor do we think that any important advantages can be gained by making so extensive an opening. The crucial incision recommended by some can never be necessary, and ought not to be practised.

The best plan is, unquestionably, to make a puncture of an adequate size, at the most dependent point, to allow the contents of the tumour to escape. This is recommended by Nægele, Zeller, Chelius, Diffenbach, and the best authorities on the subject, and while it secures all that can be gained by making an opening, it is not liable to the objections which apply to the other methods. There are, nevertheless, circumstances, in which

it will be necessary to depart from this rule. Thus when the contents of the tumour have been evacuated, a probe should be introduced through the orifice, in order to explore the condition of the bone. If found healthy, a small tent of lint should be introduced into the puncture, to prevent it from closing until the fluid ceases to accumulate within. If the bone be found denuded, rough, and carious, a grooved directory should be introduced, upon which the tumour may be freely laid open, if not too extensive; because it will be in vain to attempt to heal it without adopting this precaution. After an opening of sufficient extent has been made, the bottom of the wound may be dressed with a pledget of lint spread with simple cerate, or any appropriate digestive ointment, which should be secured by a compress and bandage, and renewed as often as necessity may require. In ordinary cases, where only a puncture is made, a light compress should be laid over the part, and confined by an appropriate bandage.

It generally happens, after the first evacuation of the tumour, that more or less accumulation takes place. Under these circumstances, the tent of lint should be withdrawn from the puncture, in order to allow the fluid to escape, and if adhesions have formed to such an extent as to prevent it from flowing, they may be broken up with the point of a probe. After the first evacuation, the blood becomes more and more serous, and is finally supplanted by a kind of watery fluid, of a wine-lee colour, or suppuration takes place, and a small quantity of pus is discharged. In many cases, however, the walls of the cavity gradually adhere, without any pus being formed.

The applications to be made to the part, subsequent to puncture, must be suggested by its condition. Should inflammation and tenderness ensue, they must be combatted by cooling anodyne lotions, the application of leeches, and the ordinary antiphlogistic remedies. But where, as is sometimes the case, the tumour remains inactive, and evinces no disposition to heal, its powers must be invigorated by appropriate applications. The Germans generally prefer, for this purpose, warm fomentations of an infusion of aromatic plants in wine, an infusion of chamomile, a decoction of bark, &c. Diffenbach proposes, also, to cover it at night with an ointment composed of from 4 to 6 parts *unguent. rosat.* and 1 part *unguent. mezerei.* spread on a light pledget of fine lint. It has even been proposed, when the parts are very indolent, to throw stimulating injections into the cavity,

in order to excite adhesive inflammation; and it was partly with a similar view, that Paletta was induced to prefer the seton as a means of opening these tumours. A case has been reported by Lobstein in which this practice was successfully instituted. The tumour was as large as a pullet's egg, and occupied the left parietal region. Having failed in his attempts to disperse it, the contents were evacuated by a puncture, and stimulating injections were thrown in through the aperture. Slight pressure was afterwards kept up, and a cure was accomplished in a few days.* Cases may occur to demand this practice; yet it should be resorted to with great caution.

A judicious application of these means will generally conduct the case to a favourable issue, without the occurrence of any unpleasant symptoms. The prognosis is indeed generally considered favourable in most cases of this affection, and is seldom otherwise, except where the disease has been allowed, by too long delay, to inflict extensive ravages upon the bone. Most writers, too, represent the opening of such tumours as perfectly exempt from danger; yet we could cite cases in which it was followed by death, even though the bone was not affected. Goelis, amongst others, speaks of such an occurrence; and Braun reports a case, in which, after a few days, the child was seized with fever and died. In the course of the foregoing remarks, we alluded to a case which recently came under our care, conjointly with Dr. Steuart. It was the child of a medical friend, and differed from the generality of such cases in the circumstance, that the subject was about two years old. The tumour was large, and notwithstanding various means were employed to disperse it, continued to increase in size, until it was thought it would not be prudent to refrain longer from opening it. A puncture was accordingly made at one of its most dependent points, and a considerable quantity of watery blood evacuated. As the bone was found to be healthy, a small tent was introduced to prevent the aperture from closing, and cold applications directed to be made to the head. On the second day, the fluid which had accumulated was again evacuated, and the same course was continued. The child, however, became feverish, and was finally seized with violent convulsions and other evidences of meningeal and nervous irritation, which, notwithstanding the free abstraction of blood, both from the arm and by leeches, the

* Pigné.

use of cathartics, cold to the head, blisters, &c. continued to recur until death took place.

As regards the treatment of those tumours which we have represented sometimes form in the diploë, or within the cranium itself, especially such as are of an erectile character, not much can be done towards effecting a cure. In a majority of instances, if they were to be opened, a fatal hemorrhage would be apt to ensue, particularly where the whole thickness of the cranium is destroyed, so as to deprive us of the advantages of compression. Still we are inclined to think, that in such cases as those reported by Flint and Hoere, and, indeed, in all cases in which the inner table of the skull is entire, if we possessed any positive means of distinguishing them from others, an opening might be safely made, and if alarming hemorrhage should follow, that it might be effectually commanded by a properly adjusted graduated compress. The enlarged vessels would then become obliterated, and the cavity might be healed up by granulation. But before such an operation is resorted to, there should be a certainty that the inner table of the bone is not destroyed, otherwise there will be no solid point, against which pressure can be made, and we should incur the danger of fatal hemorrhage.

This may be regarded as a general summary of our knowledge in regard to these sanguineous tumours of the head. It will be observed that their pathology is still involved in much obscurity, and we are not certain that we have added any thing to render it more intelligible. It may, indeed, be thought that we have erred, in grouping under this head, erectile tumours of the diploë, and parts beneath. We are not satisfied that we have acted with strict propriety in doing so, but we were anxious to direct more attention to them than they have generally received. This, in fact, has been our chief motive for publishing the paper. We are persuaded that most of our readers are not in possession of much of the published information which has a bearing on the subject, especially, as most of the English works scarcely contain any notice of the disease. Hence, if we have not added any thing to increase our knowledge of its pathology or treatment, we may perhaps have rendered them a slight service, by giving them a digest of what others have advanced upon these topics.

ARTICLE II.

Sketches of Cases. By Wm. N. Baker, M. D. Lecturer on Anatomy and Physiology, Baltimore.

Case I.—*Purpura Hæmorrhagica.*—John Beecher, aged 20, of a nervo-lymphatic temperament,—called for advice on the ninth of March. He complained of profuse and constant hemorrhage from the gums, which had troubled him for two days, and was preceded by slight rigours. He was a shoemaker's apprentice, and worked in a confined and ill-ventilated alley, sleeping at night in a small garret-room with five or six of his fellow labourers. His tongue could not be examined, being constantly covered with the oozing blood; his pulse was irritable and excited. Salts and antimony were directed in decisive doses,—iced drinks, an astringent gargle, low diet, and confinement to his bed.

March 10th. Patient no better—had bled prodigiously during the night;—his tongue was coated, his pulse tense, and tenderness was manifested on pressing the epigastric region. The medicine had acted freely. The patient was anxious to get up, and, to my surprise, exhibited but little debility, notwithstanding the excessive loss of blood. I determined on opening a vein, and on raising his sleeve, observed in the creases of his arm extravasated blood, of a dark venous character. On further inspection, numerous petechiæ, looking like flea-bites, were seen on the arms, chest, and other parts of the body. A vein was opened however, and cautious attention directed to the pulse,—20 oz. of blood were taken before the pulse or the patient acknowledged its loss. Ice was ordered, and the ice gargle continued. 9 P.M. Patient better; the hemorrhage continues slightly, pulse calm. Prescribed, ℞. Gum opii, acetat. plumbi, āā. grs. ij. The blood which was abstracted in the morning did not separate completely, but presented a dark, thin, jelly like appearance. 11th. Patient better; hemorrhage ceased; directed seidlitz powders occasionally, and as soon as practicable, a visit to the country. He called a month afterwards, to report himself completely well.

Remarks.—The detail of the treatment in this case is of but trifling importance, and I am persuaded might have been conducted much better. The main point is the general principle to which the disease yielded. The remedies employed were decidedly antiphlogistic. The case certainly wore an alarming aspect, and the loss of blood was so great, that I am unwilling to

publish an estimate of its amount. Purpura hæmorrhagica has been conceived by some to be a disease of debility, by others inflammatory in its character. It might seem unwarrantable to generalize from a single case. But it occurred to me, that the confined and tainted air of the alley, the scanty diet, the sedentary life, the crowded garret, had so impaired the nutritive function in Beecher, as materially to impoverish the blood—the whole system was weakened and relaxed by the same cause. A chill and a fever came on, and the force of the circulation was competent to throw this thin and dissolved blood through the non-resistant capillary tubes;—non-resistant, because weakened and toneless under the operation of the remote causes. Two indications were then to be fulfilled;—to subdue the unnatural force of the circulation; and to give tone to the general system. I saw no evidence to sustain the opinion of some, that this disease consists in an inflammation of the venous radicles.

CASE II.—*Calculus in the duct of the Submaxillary Gland.*

Mr. M——— was seized with a violent acute pain under the right jaw. The submaxillary gland was enlarged, hard, and painful; the tongue was swelled and thickly covered with a tough white fur; the uvula injected and relaxed. The pain became excruciating in the side of his head and neck. He was bled largely from the arm, leeched freely, purged and put upon antimonials. 10 P. M. Patient no better;—ordered: ℞. Pulv. Dover. grs. XV. and a hop poultice. On the next morning, a calculus, as large as a small sized bean, was seen engaged in the mouth of the duct of the submaxillary gland. Its removal put a period to the patient's sufferings, which were intolerable. The constitutional symptoms were very severe.

CASE III.—*Abscess and ramollissement of the Corpora Striata.*

The history of the following case is kindly furnished by my friend Dr. F. Chatard, the attending physician; to which I have added the autopsy.

"Alice McMahon came under my care about three years ago; she was then labouring under an affection of the heart which was clearly indicated by the laboured and tumultuous action of that organ, and the extreme irregularity and intermittance of the pulse. She was treated by venesection frequently repeated, and the use of tinct. digitalis; beginning with six drops every three hours, and increasing the dose every third day. This was continued for upwards of six months, with marked benefit and almost total

cessation of the palpitation of the heart, which had been heretofore very frequent. She laboured frequently under catarrhs, and complained often of pain in the chest. Some months before I saw her, she was under the care of another physician during a severe catarrhal affection. For the last twelve months previous to her death, her health had been pretty good, with the exception of one or two attacks of palpitation, attended by great difficulty of breathing: this was relieved by venesection. Three or four weeks before her death she was seized with convulsions. Not being at home when sent for, another physician was called in, who bled her freely. I did not see her until the next day, when I found her in the following condition:—total loss of speech,—quite conscious and mind sound,—paralysis of the right arm and leg, as well as the right side of the face,—the tongue when protruded, did not deviate to right or left, and appeared perfect in its movements. Finding her pulse strong, I drew a large quantity of blood from the arm. This produced no relief. Blisters, sinapisms, and stimulating embrocations were employed. The bowels were kept open. The nux vomica was employed at a later period. Under this treatment she recovered the partial use of her leg, the arm remaining the same. About a week or ten days before her death, she spoke a couple of words, but could not repeat them. Three or four days before her death she recovered her speech, and spoke, although with difficulty. On the day previous to her death, I saw her in the morning, and conversed some time with her,—she did not complain of any pain, and was cheerful. Her speech was still embarrassed but sufficiently distinct. That night I was sent for in great haste, and found her labouring under symptoms of apoplexy. She was bled freely without any relief, and expired the next morning."

Autopsy.—The frame of Alice McMahon was large and masculine. The amazonian proportions of the body, strongly contrasted with the blanched pearly hue impressed by months and years of suffering and disease. On opening the thorax, the only abnormal appearance was presented by the heart. Considerable deposites of cartilage were seen on the semilunar valves. The cranium having been removed, the pia mater was found somewhat injected, and the full cerebral veins wore an aspect by no means unusual. The medullary substance was quite vascular. But the corpora striata were the seats of more interesting disease. The corpus on the right side was softened and of a dark ashy colour. On the left side, the ramollissement was more extensive, and shaded

away into the optic couch and anterior lobe of the cerebrum. The softened structure being carefully removed, a cavity was entered, occupying the centre of the striated body. Its walls were well-defined, and its area was partially occupied by a thin fluid composed of the broken down medulla, tinged here and there with the carmine of the blood, and not unlike a mixture of strawberries and cream.

We observed nothing else of note in this examination.

CASE IV. *Abscess of the Corpus Striatum and extensive sanguineous effusion on the base of the Brain.*

I regret that a detailed history of the last indisposition of Mr. T * * * * cannot be procured. He had been ill, and complained principally of pain in the head. Large bleeding and other means were directed by the able attending physician; and Mr. T. apparently recovered. For several days he had resumed his customary exercise. He took a hearty supper and a bottle of old porter, and went to bed. In the night the family were roused by the groans of this gentleman, who was found by his physician in a condition of profound apoplectic coma. Notwithstanding the speedy and large detraction of blood, the brain was overwhelmed, and the patient sunk.

Autopsy.—I removed the cranium in the presence of my friends, Dr. Steuart and Professor Dunglison, the attending physicians. The brain was firm. Both the meninges and cerebral substance were much injected. Several ounces of blood were effused on the base of the brain. The left ventricle was distended with serum, and a small quantity was found in the right. In the corpus striatum on the left side, we found an abscess, which certainly was not a recent affair. The walls of the abscess were softened, and the ramolissement extended beyond the median line. The convalescense of Mr. T. while disease was revelling in the very midst of this most delicate of structures, seems indeed surprising. This extensive excavation of the striated body, without the loss of any faculty of the mind, and without involving in its sympathies any of the organs necessary to life, would lead us to conclusions not very reputable to the functions of the corpus striatum in the animal economy.

ARTICLE III.

Dagger's Sulphur Springs.

[Fully impressed with the importance of a correct knowledge of our principal mineral waters, to the profession as well as the public at large, we shall feel greatly obliged to any one, who will communicate to us accurate and scientific information in relation to this subject. Such communications, when suited to our pages, shall be immediately published. We now insert the following account of Dagger's Sulphur Springs, which has been forwarded to us.] EDITOR.

THESE springs are situated in the county of Botetourt, about two and a half miles from the James River, sixteen miles from Pattonsburg, eighteen from Fincastle, twenty-two from Lexington, and thirteen miles from the turnpike, leading from the latter place to the White Sulphur Springs, which are distant about a day and a half's ride.

The medicinal properties of these waters have been satisfactorily tested; and certificates testifying their efficacy have been tendered the proprietors by individuals, who have experienced their healing influences; but they are not disposed to extend the testimony on that head beyond a simple statement of facts; and as these are sufficiently developed in a letter from an eminent physician who visited and analyzed them during the last season, they make the following extracts from it:

"DANVILLE, VA. *April* 28, 1835.

Dear Sir:

* * * * * *

I visited Dagger's Springs on the 24th of last July, and on the next day, proceeded to subject the water to a number of chemical tests. The experiments performed, though not as full, and as satisfactory as I could have wished, were sufficient to demonstrate, that the water possesses highly valuable properties, and sufficient also, to make us somewhat acquainted with the *nature* of those properties. The most active mineral ingredients in the water, are carbonated alkalies. In this it differs materially from the white and salt sulphur, and is more nearly assimilated in its properties to the red and grey sulphur. It is, however, more decidedly alkaline, than either of those springs. This peculiarity will ever recommend it to persons subject to acidities of the stomach, and to the other concomitants of dyspepsia; while

the large quantity of sulphuretted hydrogen that it contains, will render it useful in all of those complaints for which sulphur water is usually prescribed.

The following experiment was performed, with the view of ascertaining the quantity of gas contained in the water. Three measures of the water were placed in a retort, and the bulb of the retort plunged in water, heated to the temperature of 108° Fahrenheit. The gas, as it was extricated, was received over mercury, in a graduated measure. The result was, that the three measures of water yielded one measure of gas. This gas was subsequently tested, and found to consist of sulphuretted hydrogen, azote, and atmospheric air—principally of the former.

The presence of iron is not detected by the usual tests; but the water, when treated with prussiate of potash, and subsequently with sulphuric acid, yields a blue precipitate, which is evidently prussiate of iron. The sulphuric acid, having a stronger affinity for potash than the prussic acid, disengages the latter. The acid thus disengaged, unites with the iron in the water, and forms prussiate of iron, or Prussian blue.

Although the water contains but about thirty-six grains of mineral substances,* to the gallon, it acts, under certain circumstances, with great promptness on the bowels. This we might infer from the nature of the ingredients with which it is impregnated; but, as experience sometimes falsifies the elaborated deductions of the theorist, I deem it necessary to establish the truth of my assertion, by reporting the result of an experiment performed with the water on my own person. On the day of my arrival at the spring, I was sensible in some degree of acidity in my stomach. As I passed the spring, on my way to the hotel establishment, I took a very moderate draught of the water, which, in less than an hour, produced a copious alvine evacuation, and kept my bowels moderately open for the next twelve hours. After my system was thus cleared out, it produced very little impression upon the bowels.

It may be laid down as a general principle, that *when there is acidity in the stomach, the water will act with great promptitude upon the bowels; but in the absence of such acidity, the action of the water is expended, principally upon the urinary organs, and*

* The smaller of the two springs at the Red Sulphur, contains about sixty grains per gallon. The larger, which is most used, does not contain but about twenty-four grains per gallon.

the cutaneous system. Its effects upon the system are invigorating —it promotes digestion, and improves the secretions generally— it strengthens, without producing an undue excitement. and may therefore be used beneficially in some cases, in which the waters of the White Sulphur, from its stimulating properties, would prove destructive.

I would only say, in conclusion, that I was pleased with the manner in which the establishment appeared to be conducted, and with the spirit of enterprise manifested, and the taste displayed in the plan of improvement, which was kindly exhibited to me. I met with no situation among the mountains susceptible of as great improvement as that selected for the buildings. It may be made a second Eden.

I am engaged in preparing a work for the press, in which this spring will be more particularly noticed, and attention directed to objects of interest in the surrounding country. It would have been complete before this, but for the peculiarities of my situation, which allows me but little leisure for literary pursuits.

I was told of another spring, belonging to the establishment at Dagger's Spring, from which I was informed it was designed to supply the bathing establishment. From the account given of it, I have no doubt but that it is highly alkaline. I regret very much that it was not in my power to examine and test its properties.

In haste, but very respectfully, sir,

Your obedient servant,

J. S. Baker."

The opinions expressed in the above extracts, have been fully corroborated by the experience of numerous individuals, who have partaken of the waters of these springs, and experienced their salutary effects; and doubtless others will be induced to test their virtues.

SELECTED PAPERS.

ARTICLE I.

Salubrity of Pensacola. By Isaac Hulse, M. D.

[We copy the following letter from the "Army and Navy Chronicle," for April 16, 1835; although we are not prepared to accord with the author, either, that "the *chief* element in the generation of diseases is decayed *vegetable* matter," or, that the climate of Pensacola is "the *finest* upon the globe, for consumptive persons."]

United States' Naval Hospital,
near Pensacola, Feb. 18, 1835.

Dear Sir,—I have had the honour to receive your letter of the 11th inst. in which my opinion is requested on certain points relative to the salubrity of Pensacola. It will afford me great pleasure at all times, to give you such information as I may possess, and in attempting on this occasion to comply with your wishes, I will begin by stating your questions:

"1st. Is there any natural cause in the situation of Pensacola to render it subject to bilious or yellow fever?

"2d. What seems to be the causes of the visitation of bilious and yellow fevers to Pensacola about once in six or seven years, after intervals of perfect health? Can these causes be remedied, and how? and at what probable expense?

"3d. Is, or is not, the climate of Pensacola especially beneficial to persons suffering from diseases of the chest—equally so with St. Agustine—and much more so than New Orleans, Mobile, or any southern cities situated on rivers, or affected by fresh water air?"

The natural causes of bilious and yellow fevers in Pensacola are extremely few, situated as it is on an arid plain, remote from any fresh water river.

The chief element in the generation of diseases, is decayed vegetable matter. If animal matter be added, the cause will be more active, and the disease will be somewhat modified. Heat and moisture must be superadded to these. The scrubby oak, the dwarf pine, and the fine sand of Pensacola, proclaim their inadequacy to the production of vegetable matter, the essential ingredient, and indeed, the *sine qua non* of the cause of yellow fever. The stream which nearly encircles the city, it is true, gives life and vigour to a growth of shrubbery; but the shrubbery is evergreen, and its leaves only drop gradually and singly, (being continually renewed by other leaves,) and are instantly immersed in that

lively little stream which is ever gushing from its bed, or they find a screen from the rays of the sun in the thick shade that covers it. These springs of water are remarkable for their purity and softness: they commence nearly opposite the centre of the city, and running in different directions, form an estuary with the waters of the bay, one above, and the other below the city, about a mile from each other. It is to be observed, that the breadth of this springy ground varies from ten or fifteen, to one hundred, and even two hundred yards, and generally, though not throughout, it is a purely sandy bottom. There are some few spots only, in which rich mud is largely mixed with the sand.

This part of the subject will be left for the present, to be reverted to in the consideration of the *second question.* And here, I must dissent from the admission, that bilious and yellow fevers do visit Pensacola as often as once in six or seven years; as I do not find on record any account of these diseases reigning here previous to our times, except those given by Dr. Lind, which occurred in 1765. This author, however, only informs us that a mortal sickness prevailed in a regiment newly arrived from England. He does not mention that it affected the inhabitants, and states, that on board the ships in port every person enjoyed good health. Some of the old inhabitants of Pensacola, who are noted for accuracy of observation, inform me that they had the fever in 1811; these two, added to the visitations of 1822, '27 and '34, seem to constitute the sum of its history here, both written and traditional.

We have in possession certain facts, which lead with great readiness to the answer of the question, "what seem to be the causes of the visitations of the yellow fever to Pensacola?" And the most striking and important one is, that neither this disease nor any of its family has ever occurred here, except in consequences of the absence of rain in July and August. This circumstance is of exceedingly rare occurrence, so much so, that those months are proverbial for being prolific in copious showers accompanied with thunder and lightning. Yet it cannot be admitted, that dry weather alone at the period above mentioned, will with certainty bring yellow fever at Pensacola; for although the springs above described, become rather lower, and leave some dead vegetable substances exposed to a high temperature, those of us who are familiar with their copiousness cannot conceive that there is ever sufficient pabulum supplied from this source alone to impregnate the atmosphere with deleterious effluvia. The nuisances of the city create other impurities in the air, which united with the exhalations from the margins of the streams, form a poison sufficiently concentrated during unusually dry seasons to cause yellow fever. No one acquainted with Pensacola, will deny that the back yards of a majority of the inhabited lots exhibit a fearful accumulation of "unclean things," which remain undisturbed equally by the police and by the occupant. From the proximity of the

springs to the surface, the sinks are shallow, and are very liable to overflow and "scatter their odours to the winds." There can be but little doubt that the mass of rotten sea-weed which lay upon your strand all last summer, the stench of which is still strong in our recollection, should be added to the list of city nuisances. It will be readily suggested to any one how easily these substances may be removed, and their qualities neutralized. Fifteen years ago, the city of Baltimore was visited annually with sporadic cases of yellow fever. They had their origin in local causes, which were pointed out by members of our profession, and removed by an enlightened police. Professor Potter, of the University of Maryland, has repeatedly said in his lectures, that the time was not far distant when communities would be so well informed on the subject of fevers in question, that it would be considered criminal in the authorities to allow them to occur in large cities. This prediction is now almost literally verified in his own city. This gentleman has treated the subject more ably than any other writer, in a little work "on Contagion," a work which will hand his name down with freshness to succeeding generations.

The following observations tend to prove that without the superaddition of local causes, found in the town itself, to the malaria of the marshes, yellow fever would be unknown at Pensacola.

1st. Yellow fever never originates in the vicinity of Pensacola—nor even on the very margin of the marshes, where the population is sparse.

2d. It never originates among the shipping at the anchorage, directly opposite the town. The Falmouth ship of war furnished only two cases of it to the hospital last summer, and they were officers, who probably contracted it in town. The schooner Grampus, it is true, suffered from the disease while lying in port, but she had all the materials for its causation, as it was proved, in the decayed and decomposed state of the plank of her ceiling. It appeared on board this vessel fifteen days previous to the existence of any signs of it at Pensacola.

In confirmation of the opinion that the *marsh* effluvia alone of the place is not sufficient to produce the disease in question, it may be appropriate to add the following facts. The east and west villages of the navy yard are equally exposed, as it regards the bay and the small ponds in the rear. One of them fronts the bay on the east, having a series of small ponds west of it; the other fronts the bay on the south, and has the ponds on the north. The ponds in question were dry last summer, and their bottoms presented to view a thin layer of mud. The east village did not furnish a case of sickness last autumn; but in the south village eight or ten cases of yellow fever occurred within a few hours of each other, and two of them died. The south village had the disadvantage of a slaughter house situated immediately in its rear, which was exceedingly offensive. The navy yard, equally exposed with either

village, to the effluvia of the ponds, remainded perfectly healthy, with the exception of the case of one gentleman, who had a slight attack, traced to Pensacola. I was an observer here, in 1827, when no case originated at the navy yard, nor at either village.

It has been represented to me upon good authority, that the swamp or shrubbery of the springs of Pensacola, was cleared up in 1811 and 1822. We all recollect that streets were opened through in 1827, and I think it was partially cut up again, the summer before last. These are certainly remarkable coincidences. It cannot be conceived that insalubrity would follow these clearings, provided the ground were put under cultivation, but clearing without cultivation has the effect to expose the surface to the rays of the sun and heat, and probably to produce an evolution of unhealthy effluvia, which otherwise might have remained quiescent.

The causes of yellow fever, at Pensacola, therefore, are local, and are within the power of your police. They can be remedied with a little attention to cleanliness, and at a very trifling expense. The successful means, used by many cities in the United States, which were formerly visited almost annually, by this scourge of the human race, confirm our views of the nature of these causes, and inspire confidence in the efforts of man, for their removal.

For your third question, I have but little room left. Indeed, I could scarcely hope to do justice to the subject, in the space allotted to this communication, and as I propose to resume it on some future day, I will content myself with stating it as my belief, that this is the finest climate upon the globe, for consumptive persons, and offer for your consideration, two facts only. 1st, I have never known nor heard of a case of consumption originating here. 2d, I have known several desperate cases, to be cured here, with very little medical treatment.

When Don Juan Ponce de Leon came in search of this country, he sought a spring, the waters of which was to rejuvenate man.

The fable which gave spirit and animation to his enterprise, like most others among rude nations, had certain truths for its basis. The fountain of health, if not of youth, has a real existence here, and in the extent of benefit, it is destined to dispense to the human family, the bright visions of the Spanish hero will be more than realized.

I am respectfully, and truly yours,

ISAAC HULSE.

To Walter Gregory, Esq. Pensacola.

ARTICLE II.

Experiments on the Blood. Instituted by L. GMELIN and F. TIEDEMANN, conjointly with E. MITSCHERLICH.*

(Translated from the German for this Journal.)

No part of the animal body is so important, in relation to chemical physiology, as the blood. Into it are received the products of assimilation; through its medium the animal body is maintained in a state of chemical affinity with the external air, and from it are formed all the organic solids, and the various secretions. An accurate knowledge of this fluid must, therefore, contribute greatly to explain the most important changes which take place in the elements of the organization, as for example those which are effected by digestion, respiration, nutrition, and secretion. These considerations have incited us to undertake the present series of experiments.

I. *Experiments relative to the carbonic acid of the blood.*—The contradictory results obtained by previous investigators have left it doubtful, whether any free carbonic acid exists in the blood. On the one side it is asserted by Vogel,† that fresh bullock's blood, when placed under the exhausted receiver of an air pump, disengaged so much carbonic acid gas as to render lime-water turbid. Scudamore‡ maintains, that the coagulation of the blood is connected essentially with a disengagement of carbonic acid gas, and in his experiments he found, that when six ounces of blood were placed under the exhausted receiver of an air pump, the carbonic acid gas which was disengaged, when passed through baryta-water, threw down a precipitate of carbonate of baryta, indicating from a third to a half a cubic inch of carbonic acid gas. According to Brand,¶ two ounces of venous or arterial blood, when placed in an exhausted receiver, evolve two cubic inches of carbonic acid gas; so that one proportion of blood would contain a little more than one proportion of this gas.

On the other hand, it was long since represented by Darwin,§ that when a ligature was applied upon two points of the jugular vein of a living animal, so as to include the intermediate portion of the blood, and the vessel placed in water at the temperature of 38° C. under an exhausted receiver, no expansion took place, which must have been the case if any gas was evolved, but on the contrary, it rather contracted.

* During his sojourn at Heidelburg, in the winter of 1831–32.

† Schweiger Journal der Chemie und der Physique, Bd. iii. p. 399.

‡ Versuche ueber das Blut. Würsburg, 1826, p. 83. 90.

¶ Philosoph. Transact. 1818. p. 181.

§ Ibid. vol. 64. p. 2.

According to the experiments of John Davy,* no gas is evolved, either during the spontaneous coagulation of the blood, under the natural pressure of the atmosphere, or when that pressure is removed by the air pump; nor did any such evolution take place when the serum was coagulated by heat. He found, on the contrary, that the serum of the blood was capable of absorbing a greater proportion of carbonic acid gas than pure water, which it could not do, if already saturated with that acid.

We have been induced, by these contradictory results, to believe, that a new suit of experiments, so conducted as to exclude all contact with the external air, could not fail to be valuable. In accordance with this view, the following experiment was performed:—The crural artery and vein of a living dog were laid bare, and into each of them a small metalic tube, furnished with a stop-cock, was introduced and secured by a ligature. To these tubes a flexible gum-elastic catheter was adapted, by which the blood, as it flowed from the artery and vein, was conducted into a vessel previously filled and inverted over quicksilver. To receive the blood, a glass cylinder closed at one end, three and a half inches long, and one inch in diameter, was employed, which was previously exhausted of every particle of air by filling it with quicksilver, and inverting it over a saucer containing that metal. In order to exhaust the elastic tube of air, the stop-cock was turned so as to allow a stream of blood to pass through it, when its free end was brought under the exhausted cylinder, in which the blood was collected with great ease. In this way, the cylinder was half filled with venous blood; and by the same process, the arterial blood was likewise collected. The experiment succeeded so perfectly, that not a particle of air existed in either cylinder. The cylinders with the blood were then transferred to the receiver of an air pump, and submitted to the influence of exhaustion.†

During the first strokes of the piston not the slightest bubble of air could be observed in either the arterial or venous blood, but as soon as the barometer stood at 27-28 inches, English, bubbles became manifest, and the quicksilver in the cylinder rose an inch and a half higher than that in the saucer, which sunk about an inch, so that its absolute elevation in the former was half an inch. On the surface of the venous blood several bubbles were observed, while on the arterial, owing perhaps to its more perfect coagulation, in consequence of a greater time having elapsed after its escape from the vessel, a large bubble appeared at first in the upper part of the cylinder, by which the level of the blood was depressed, and then a larger one between the blood and the quicksilver.

* Edinburg Med. and Surg. Journal, vol. 29, p. 253.

† In these experiments, we acknowledge with gratitude the assistance of our friend and colleague, Privy Counsellor Muncke.

The bubbles which appeared in both species of blood on the removal of the atmospheric pressure, must have either proceeded from the vapour remaining in the vacuum, or consisted of a permanent gas generated by the blood. The first is easily possible, inasmuch as the blood was supported by a column of quicksilver one and a half inches high, which must have subsided, as soon as the elasticity of the air remaining in the exhausted receiver amounted to less than an equivalent to a column of this height;—hence the probability that the bubbles only became apparent when a perfect vacuum was produced. The question would be decided by the gradual admission of the external air into the receiver. If the bubbles were merely a torricellian vacuum, they would, under such circumstances, immediately disappear; if they consisted of a permanent gas, this must, in the first place, be exceedingly small in quantity, and would after the lapse of some time be again absorbed by the blood. On admitting the external air into both receivers, it was observed, that long before they were filled, the bubbles entirely vanished, thus proving that no permanent gas could have been present.

This experiment, by which it was shown by the removal of the atmospheric pressure from the blood by means of the air-pump, that that fluid does not contain either free carbonic acid, or any other permanent gas, is entitled to the more confidence, as all circumstances likely to have led to error were carefully avoided. The admission of the external air to the blood was effectually obviated, and the experiment was accomplished in less than an hour, under a temperature of from 5 to 10° C. so that within this time, and under these circumstances, no chemical change could have taken place in that fluid.

It may be remarked, moreover, that both the venous and arterial blood, under this state of perfect exclusion from the atmosphere, coagulated as perfectly as under ordinary circumstances, and that from the commencement of the experiment, a manifest difference of colour was observed in them. The brighter colour of the arterial blood cannot, therefore, be owing either to the frothy condition in which it is caught, as represented by J. Davy,* as that was here avoided, or to the nature of the coagulation, since the difference of colour was as perceptible before that change took place as afterwards.

In order to test the truth of the assertion made by J. Davy, that carbonic acid gas is absorbed in greater abundance by the serum of the blood, than by pure water, arterial blood, which had been submitted to the influence of the air pump, was gradually exposed to carbonic acid gas, without removing it from the cylinder in which it was contained, or disturbing its coagulum, care being taken at the same time to exclude the atmospheric air. Under a temperature which varied from 5 to 10° C.

* Edin. Med. and Surg. Journal, No. 105. p. 243.

the absorption took place very gradually by the blood, which was not agitated, and did not become very manifest before the lapse of five days. It was now found, that 100 parts of blood had absorbed 120 parts of carbonic acid gas; and after the lapse of ten weeks, during which the experiment was kept up under a temperature of 10° C. 16 parts more of gas were absorbed, amounting in all to 136 parts. Although the determination of the quantity absorbed could not be determined with critical accuracy, the result was sufficient to confirm the truth of Davy's assertion. After this protracted contact of the carbonic acid gas with the blood, about one half of that fluid was converted into a dark red coloured coagulum; the serum was somewhat transparent, and was tinged of a dull colombine red, by the solution of the colouring matter of the blood which was suspended in it.

In order to confirm the results obtained from this experiment, we devised another, somewhat different in its details. We were particularly desirous of ascertaining, as the blood does not contain free carbonic acid gas, whether it possesses any in a state of combination.

The venous blood of a dog was collected precisely as in the last experiment, except that it was received into two cylinders, previously exhausted over quicksilver, into one of which a small quantity of concentrated acetic acid, previously boiled, had been introduced. The same course was pursued with the arterial blood.

In the arterial and venous blood which was not mixed with the acetic acid, the same changes were observed, when they were submitted to the influence of the air pump, as in the preceding experiment. So long as exhaustion did not bring the barometer to 26 English inches, no bubbles could be perceived; but when it reached 26½ inches, a void space was formed, and the quicksilver rose in the cylinder, beneath the blood, 2½ inches—a greater height than on the last experiment. This void space was formed partly above and partly below the coagulated venous and arterial blood, and was not attended with the disengagement of any bubbles from the interior of the mass of those fluids: it disappeared as soon as the smallest quantity of air was admitted into the receiver.

From the arterial blood which had been mixed with the acetic acid, beneath which the column of quicksilver also rose 2½ inches, a number of small bubbles escaped, as soon as the strokes of the air pump brought the barometer to 20 inches English, and when it reached 25 inches, a void space formed in the cylinder, above the column of blood, equal to one-third its height. On the admission of air into the receiver, a small quantity of gas still remained in the cylinder, but, in a few moments, entirely disappeared. The same phenomena were observed in the venous blood which had been mixed with acetic acid, except that the bubbles were not disengaged until the barometer stood at 23½ inches,

and when it stood at 25 inches, the void space formed by the gas above the column of blood, equalled one half the height of the column of that fluid. On the admission of air into the receiver, larger bubbles remained than in the arterial blood, although the quantity of venous blood used was smaller.

This experiment proves, that both venous and arterial blood contain carbonic acid gas in a state of combination, the quantity of which is greater in the former than in the latter. The alkaline properties of the blood are, therefore, not derived so much from the pure alkalies, as from those salts in a state of union with carbonic acid.

The arterial and venous blood which had not been mixed with acetic acid, were exposed to carbonic acid gas, as in the last experiment. At the end of three weeks it was found, that 100 parts of arterial blood had absorbed 140 parts of carbonic acid gas, while the same quantity of venous blood had only absorbed 111 parts. On account, however, of the thick consistence and dark colour of the blood, and the smaller quantity employed of the one than of the other, the results cannot be considered as entirely certain. The parcels of arterial and venous blood which had been mixed with acetic acid, after standing three weeks over quicksilver, were found converted into firm brownish mass, without any separation into serum and crassamentum.

Shortly after the termination of these experiments, which were performed in the course of the past winter, we obtained the valuable paper of Ed. Ch. F. Stromeyer,* from which we learned with great pleasure, that by a different series of investigations, he had arrived at the same conclusions, viz. that the blood does not contain any free carbonic acid gas, but holds a certain quantity of it in a state of combination.

By these concurrent results, we may regard the question relative to the existence of carbonic acid in the blood, as fully decided. Let us next compare them with the principal theories of respiration, in order to see how far they will harmonize.

Lavoiser† supposed that the blood, without any direct contact with the atmospheric air, exhales into the bronchial tubes, through their lining membrane, a kind of halitus, composed essentially of carbon and hydrogen, which in coming in contact with the oxygen of the inspired air, is converted by a species of combustion, into carbonic acid gas and water.

In so far as this theory does not suppose the existence of free carbonic acid gas in the blood, it comports very well with the results of our experiments. Other considerations, however, render it exceedingly improbable. In the first place, the exhalation of this moisture from the

*Schweigger Journal fur Chemie and Physik. Bd. 64. p. 105.

† Mem. de l'Acad. des. Sc. année 1790, p. 601. ubers. in Scherer's Jour. der. Chem. Bd. 10. 560.

lungs, composed, as is represented, of carburetted hydrogen, and which is combustible at a temperature of 38°, has never been proved. Moreover, the capability of a gas to penetrate a moistened animal tissue, and thus to come in direct contact with the blood, as shown by the experiments of H. Davy, cannot be questioned. He concluded from his experiments,* that the air traverses the moistened tunics of the vessels of the lungs, and is taken up by the serum; that a part of the oxygen enters into combination with the carbon of the blood, to form carbonic acid, while the other part unites with the cruor; finally, that the blood throws off the whole of the azote inspired, together with the carbonic acid formed by the combination of the oxygen with the carbon. Finding, moreover, that when hydrogen was respired, carbonic acid gas was thrown off, although in smaller quantity than in ordinary respiration, he inferred, that the venous blood, in the condition in which it returns to the lungs, contains a certain proportion of free carbonic acid.

If this hypothesis were well founded, as much carbonic acid should exist in the arterial blood, as, under the natural temperature of the body, would be in relation with the quantity contained in the air expired from the lungs, which would not be inconsiderable, since it appears from our experiments, that cold blood is capable of absorbing more than its own volume of carbonic acid gas, which would, according to this conjecture, be set at liberty. Against this hypothesis it may be urged, that owing to the velocity of the circulation of the blood through the lungs, only a small proportion of it could be exposed to a full play of chemical affinities between itself and the air inspired, and that the proportion charged with carbonic acid would be so small, compared to the whole mass, that owing to the affinity of that gas for the serum, it could not be disengaged even by the removal of the atmospheric pressure. A still more forcible objection may be urged against this conjecture of Davy's, relative to the existence of free carbonic acid in the blood: if the venous blood disengages no free carbonic acid gas in a vacuum, there can be none expired in consequence merely of the contact of the blood with hydrogen or other gases.

The hypothesis of Davy is, therefore, at variance with the results of our experiments,—since it is evident, that if the existence of free carbonic acid in the blood be denied, the whole of that gas which is expired must be the product of the direct combination of the oxygen with the carbon of the blood. Nor is the conclusion natural, that the azote which is taken in by the lungs enters into combination with the blood, and is again exhaled or thrown off by that fluid, since there is nothing to justify such an inference.

* Physiologisch Chemischee Untersuchung, ueber des Athmen. Lemgo, 1811, p. 113.

Legrange, like Davy, supposed that a direct contact is established between the atmosphere and the blood, through the thin tunics of the vessels; but he concluded, that this does not give rise to the immediate generation of carbonic acid gas. According to his hypothesis, the oxygen mingles with the arterial blood, and is conveyed with it into the different parts of the body, in its course through which it combines with the carbon of the blood, and generates carbonic acid gas, so that the venous blood, when it arrives at the lungs, parts with this gas, and is thus prepared to receive a fresh dose of oxygen.

However much this theory may be corroborated by the equal diffusion of animal heat, and the necessity of the arterial blood in the perfect execution of the animal functions, it cannot be reconciled with the facts established by our experiments. If, as is here assumed, the venous blood contains so much free carbonic acid gas, as to be able to part with it under the ordinary pressure, in merely coming in contact with the atmosphere, it certainly ought to disengage it much more readily, when that pressure is removed. According to this theory, moreover, the arterial blood must contain free carbonic acid gas, since a fluid charged with carbonic acid, included in a closed vessel with common air, is only capable of throwing off a part of the first of these principles. Moreover, if the hypothesis were true, the arterial blood should part with its oxygen under the air pump, with the same facility, that air in a state of mixture with other fluids, is set free under the same conditions. The non-conformity of all these circumstances renders the truth of the theory of Legrange exceedingly doubtful.

We may be allowed, therefore, to frame a hypothesis which will harmonize better with the facts which have been thus far established. If it be assumed, that the greater part or all of the properties of the secreted fluids are not dependent upon the acts of the secreting organs, but come to them already formed in the blood, it follows that they must be either derived from the aliment, or owe their origin to certain changes impressed upon it within the body. These changes are probably effected in part during the process of digestion, and on other occasions, but are doubtless chiefly accomplished in the lungs, by the direct contact of the blood with the atmosphere. Most of the animal fluids which are exposed to the external air, generate, by the absorption of oxygen, either acetic or lactic acid. The development of these materials is favoured by a high temperature, as is proved by the well known tendency of milk to become acid. The acetic or lactic acids are found in the blood, and in most of the animal secretions, either free, or in a state of combination with their alkalies; and as neither of these acids exists in so large a proportion in the aliment, as in the fluid of perspiration or the urine, they must be formed in some part of the body; and where can this take place more readily than in the lungs, in which the conditions favourable to the

generation of acetic acid, viz. a high temperature, and a free communication with the external air, so fully exist?

We learn from our experiments, that the arterial and venous blood contain no free carbonic acid, but that that principle exists in a state of combination with their alkaline salts. If, as we have conjectured, acetic acid be generated during the acts of respiration, the venous blood should contain more carbonic acid than the arterial, since by the generation of acetic acid, a portion of the carbonated alkaline salts must, by the displacement of the carbonic acid, become converted into acetates. The results of the experiments detailed above seem favourable to such a conclusion, but in order to obtain more positive data, the following was instituted:—

By means of the apparatus described above, 48 grammes of venous, and 152 grammes of arterial blood were introduced into two capacious retorts. A quantity of concentrated acetic acid, previously boiled, amounting to one-third the quantity of the blood, was introduced into each, and the retorts were luted to a bent tube, the other end of which communicated with a bottle containing baryta water. To this a second bent tube was attached, communicating with another vessel also containing baryta water, and closed with paper to exclude the air. The retorts were at first exposed to the heat of a water bath, in which all but the upper parts of their necks were immersed, and afterwards directly to the flame. The contents became thick and swelled up considerably, and the bubbles of air, which after some time were generated, passed over into the baryta water. After being exposed for eight hours to the heat of the water bath, the mass almost ceased to give out carbonic acid gas, and the experiment was consequently terminated. The carbonate of baryta which had been formed during the process, was immediately collected in a closed filter, and washed. After the products had been dried, it was found, that the carbonate of baryta obtained from the venous blood, amounted to 0.264 gramme; that from the arterial, 0.566 gramme, whence it may be inferred that 10,000 parts of venous blood contain at least 12.3, and the same quantity of arterial blood, 8.3 parts of combined carbonic acid, and that the relative proportion of this acid in the venous and arterial blood is as 3 to 2.

This experiment is so far favourable to the conjecture offered above, as it shews, that the acetic acid generated by the process of respiration, is sufficient to decompose one third of the alkaline carbonates contained in the venous blood. Still, a number of experiments, conducted under different circumstances, would be necessary to justify a positive conclusion. The difference in the quantity of venous and arterial blood employed, the size of the retorts being the same, may possibly have exercised some influence over the results obtained.

Let us, finally, arrange these considerations on respiration into the following corrollaries:

1. The air taken into the cells of the lungs in respiration, traverses the moistened membrane of the blood-vessels, and is thus brought into a state of direct contact with the blood.

2. The azote is but sparingly absorbed by the blood; hence a very small quantity of it penetrates the tunics of the vessels, by far the greater proportion remaining in the air cells of the lungs. Oxygen, on the contrary, is taken up abundantly by that fluid, and it consequently traverses the tunics of the vessel with a freedom proportionate to the affinity displayed for it by the blood. The air, therefore, which remains in the cells of the lungs, contains a greater proportion of azote, and a smaller proportion of oxygen, than that inspired.

3. The oxygen which is received by the blood, enters partly in combination with the carbon and hydrogen of that fluid, and generates carbonic acid and water, which are thrown off by expiration; while the other part combines directly with the organic particles of the blood. In both ways, it changes the chemical affinities of the organic composition of the blood, and enables them to form other compounds. Amongst these compounds, the acetic and lactic acids deserve particularly to be mentioned, as they decompose a part of the carbonated alkaline salts of the blood, setting free the carbonic acid that was combined with them, and thus prepare it to be thrown off by the lungs.

4. The acetate of soda which is thus formed during the transit of the blood through the lungs, is deprived of its acetic acid by the several secretions, especially by those of the skin and kidneys, and again combines with carbonic acid, which during the circulation of the blood through the body is generated by the decomposition of its organic elements. Carbonate of soda is thus regenerated, and conveyed to the lungs.

According to this theory, it is easy to comprehend, why, when the venous blood is brought under the vacuum of an air pump, no carbonic acid gas is disengaged, since it does not involve the necessity of the existence of this gas in a free uncombined state. But the reason why the arterial blood should present the same phenomenon is not so easy to explain. As, according to our hypothesis, carbonic acid gas is generated, in part by the oxygen taken in, and is partly set free by the decomposition of carbonate of soda by the acetic acid formed in the lungs, it can scarcely be supposed, when the freedom with which the serum of the blood absorbs this gas is considered, that the whole of it can be expired. It is more probable, that a portion of it must be retained by the blood, the quantity of which will be determined by the capacity that fluid possesses to absorb it under a given temperature, and the quantity and affinities of the air which may remain in the cells of the lungs. At

least, it must be considered, as we have previously remarked, that only a portion of the blood, while it is circulating through the lungs, can be in a convenient condition to be acted upon by the air. Only this portion, therefore, can contain any free carbonic acid; so that in commingling with that part of the arterial blood which passes the lungs unchanged, and which contains soda in the state of a subcarbonate, the free carbonic acid may combine with this salt, converting it into a bicarbonate, thus explaining the reason why carbonic acid gas is not given off, when the arterial blood is placed under the exhausted receiver of an air pump.

The further extension of this theory, and the explanation of several difficulties which it involves, would require more extensive disquisitions.—*Tiedemann und Treviramus, Zeitschrift für Phisiologie, bd.* v. *heft* 1.

[The memoir from which we have translated these observations, contains two additional sections, comprising some very interesting experiments, instituted with the object of detecting the existence of urea in the blood after the extirpation of the kidneys, and of deciding whether that principle, and the sugar of milk, exist in the healthy blood. We shall give these in our next.—Editor.]

New process for purifying Benzoic Acid. By Giovanni Righini.—Dissolve the acid in four or five times its weight of sulphuric acid, diluted with six parts of water. During ebullition, add a very small quantity of the purest animal charcoal, filter it, and while cooling, the acid will separate in crystals. Should long beautiful needles not be found, and should it still possess an odour, the operation must be repeated. Collect the crystals on a filter, remove the sulphuric acid by washing, and leave them to dry in the shade. Sulphuric acid dissolves the rezin and oil, which renders the benzoic acid impure.

To have this acid in beautiful crystals, dissolve in alcohol that which has been previously purified, and put the solution in a subliming apparatus, placed in a sand bath. Manage the fire in such a manner that the alcohol alone shall be volatilized, and long needles, perfectly white, and without odour, will be obtained.—*Gazetta Eclettica di Farmacia.—Edinburgh Medical and Surgical Journal, April,* 1835.

COLLECTANEA.

Apis vero ratio media est; quæ materiam ex floribus agri et horti elicit, sed tamen eam propria facultate vertit et digerit.—Nov. Org.

1. *Erectile Tumour with a bony Nucleus.*—M. Lisfranc lately shewed the Academie de Medecine, an erectile tumour, which he had taken from a young man twenty-four years old. It had only been two months in growing, was situated on the face, and was only the size of the tip of the little finger. But what rendered it remarkable was, that it included a concretion of the size of a hemp-seed, which was bony in its nature. The tumour was seated altogether in the cellular tissue.

M. Lisfranc incidentally remarked, that, in operating on nævi, unless at least two lines of the surrounding sound tissue was taken away, the nævus almost always re-appeared in the cicatrix, in part or altogether. He applies the same principle to all erectile tumours, unless the locality fails to allow it.—*London Medical and Surgical Journal, April,* 1835.

2. *Obliteration of the Intestine at the Ileo-cæcal Valve; Sac from the Ileum, containing* 92 *leaden Shots, and* 120 *Plum stones.*—Læmi, aged 32, entered the Hôtel Dieu on the 12th of January, 1833. He had been ill for a month, and complained of pains in the belly; he had constant nausea and frequent vomiting; by the rectum, he was only able to pass a small quantity of liquid matter, and that after considerable efforts.

The pulse is natural, as is also the respiration; the tongue is healthy, the epigastrium free from pain; there is a dull sound in the centre of the abdomen; the stools are liquid and yellow. These symptoms, added to the emaciation, originated a belief in the existence of an affection of the mesenteric glands and vessels. The patient remained in this condition a fortnight; the vomiting ceased, but the state of the abdomen and of the stools were the same.

He left the Hospital on the 2d of February, and in three days again entered. There was then observed in the right iliac region, and approaching the umbilicus, a middle-sized, unequal tumour, which moved under the hand. This circumstance rather tended to confirm the former diagnosis, and no doubt was now entertained of the existence of a tuberculous affection of the mesenteric glands. (Iodurated ointment was rubbed upon the abdomen, iodine given internally, and emollient clysters administered.) On the 10th of February, the tumour was treble the size it had been the night before; was hard but less mobile than before; handling caused pain in it. The difficulty of passing a stool was extreme. The 15th, sensibility over the whole abdomen is very great; the hand applied over the tumour is insupportable; there is vomiting, small and rapid pulse, contracted features; the patient is in a state of utter fear and anxiety, and raves about shots and death; he might have been considered delirious, but in other respects he gave every evidence of

sound intellect. The following morning the peritonitis had acquired a high degree of intensity; the patient had not a moment of quietude. He died in the course of the day.

Dissection 26 hours after death. From 15 to 18 ounces of a reddish fluid are in the peritoneal sac; recently formed false membranes, and all the usual marks of peritoneal inflammation. The small intestine is enormously dilated, whilst the colon and rectum are diminished. At the junction of the ilium with the cæcum, a sac as large as the head of a fœtus is found thrown towards the umbilicus, and covered with the mass of the small intestines. Adhesions, some old, others recent, keep it fixed to the posterior surface of the abdomen, the mesentery, and some intestinal folds. The parietes of this sac are thick and of a brown colour; on opening it, 120 plum-stones and 92 shots are seen. The stones are black, and as it were macerated in the liquid matters in which they float; in other respects they are unchanged, and contain each a fresh kernel. The shots, of size No. 2, are also blackened, and were here and there depressed. There are also some cherry stones. The sac in which they are contained is continuous with the ilium, and seemed to be formed at the expense of the latter. The ileo-cæcal valve, which corresponded to the right and lower portion of the sac, was almost entirely obliterated, and only exhibited a very small perforation through which liquid matters alone could pass. The mesenteric glands were perfectly healthy, and none of the other organs had any morbid appearances.—*Gazette Medicale, February,* 1835.—*Ib.*

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3. *Cyanosis from a communication between the right and left ventricles of the Heart.* By A. Boyer.—A case of this kind occurred recently in the wards of hotel dieu. The subject of it was a young woman who had been affected with blueness of the skin from her infancy, but without any alteration of heat of the surface, or material disturbance of function. At the age of puberty, she was attacked with anasarca and extreme oppression. Her strength declined gradually, and she finally died, without any thing particular being revealed, either by percussion or auscultation. On examination of the body a large communication was found between the right and left ventricles; the foramen ovale, however, was perfectly obliterated. The aorta was smaller than natural; but the pulmonary artery was considerably increased in size, and the lungs were gorged with dark coloured blood. It may be inferred from this case, that hematosis is not the only efficient source of animal heat. The blood of this young woman must have been imperfectly oxyginated, yet the skin, even to the last period of her life, retained the natural temperature, which contrasted strongly with its blueness.—*Gazette Medicale, Decemb.* 1834.

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4. *Method of treating Aneurismal Tumours.* By Mr. Phillips.—The essay commences by showing the necessity of inventing some operation for the cure of aneurismal tumours, by which the mortality attendant upon that of Hunter may be lessened, if not entirely avoided.

This necessity is based upon the following facts:—I have selected, indiscriminately, from the medical journals of the last ten years, 171 cases of aneurism affecting the larger arteries, which were submitted to the Hunterian operation; of these cases, 57, or exactly 1 in 3, were unsuccessful; and of

these, with the exception of 2, all died, not of the disease, but in consequence of the operation.

In the cases which were ultimately successful, secondary hemorrhage occurred 16 times.

I selected, quite as indiscriminately, from Lancisi, Scarpa, Pelletan, Boyer, and others, 29 cases in which the ligature was applied according to the ancient method, and of these only 7 were unsuccessful. So that if the only question involved were that of mortality, the evidence here offered would be in favour of the old operation.

Of the cases operated on after the method of Hunter, in 27 the ligature was applied to the iliacs 20 times successfully; in 39 it was applied to the carotids 26 times with success; 37 times to the subclavian and axillary arteries, of which only 18 succeeded; 53 times to the femoral, of which 39 were successful; 15 times to the humeral, of which 11 succeeded.

In the cases which were treated after the old method, the ligature was applied to the femoral 22 times, of which 16 were successful; 7 to the humeral, of which 6 succeeded.

The wholesale result, then, of 171 cases of aneurism operated upon by the method of Hunter, within the last ten years, has given us a mortality, almost always consequent upon the operation, of 1 in 3.

If we look at an operation in appearance much more terrible, we shall find a much less mortality;—I mean lithotomy. I have resorted to an exactly similar mode of collecting 537 cases of persons who submitted to this operation, and I find, as the result, that 431 were cured, or more than four-fifths.

When we consider, too, that there are few successful cases which are not made public, whilst unsuccessful ones are often unrecorded, it does appear to me that I am borne out in the statement, that the Hunterian operation is not so successful as to justify us in resting satisfied with it.

The next question which is put is—what is the immediate cause of obliteration? the answer to which is, the existence of a certain quantity of inflammation in the parietes of the artery.

In the absence of the ligature, or of any other foreign body, if inflammation be developed in the parietes of an artery, the common, nay, almost invariable, consequence is a complete obliteration of the canal.

In support of this statement, among other observations, cases of *gangrena senilis* and *ergotism* are detailed.

Idiopathic inflammation of the internal tunic of arteries is very rare; and it is not easily excited even by the introduction into the tube of certain mechanical agents.

Inflammation of the external, or cellular tunic, may be excited at will by mechanical irritation; and when excited, produces almost invariably the following results: an exhalation of a fibrino-albuminous matter, and sometimes even of pus, between the arterial tunics, by which the calibre of the canal is considerably lessened; a rosy colour of the internal tunic; a coagulation of the blood contained in the canal; and an exhalation, upon the internal surface, of an albumino-fibrinous matter, which is presented under different forms.

After having very fully established the correctness of the preceding data, it occurred to the author that if he could devise any means by which he could

excite inflammation of the external tunic, that the exhalation, coagulation, and obstruction, must follow.

To confirm that position a series of experiments were made, by introducing needles into the arterial tunics; and it was clearly demonstrated that the common effect of introducing these bodies through the arterial tunics was to excite the phenomena which have been already described.

This mode of exciting the necessary inflammation was abandoned, from the absence of any certainty that the arterial tunics were punctured.

The next series of experiments were performed to shew that the mechanical effects produced by a needle, within the canal of the artery which it had perforated, were not necessary to the success of the experiment.

In these experiments an incision was made upon an artery, and a small pellet of lint placed in direct contact with it. No injury was inflicted upon the artery by the operation, and the lips of the incision were immediately brought together.

On the second or third day the same series of phenomena as those which have been already described were produced.

As the desire of the author was to avoid all cutting, and yet to acquire a certainty that the arterial tunics were implicated, he at last resorted to the mode which has lately been stamped with the approbation of the Institute of France.

In the greater number of the cases of aneurism, the external, or cellular tunic of the artery, is a principal element in the composition of the sac; and whether that tunic be distended or not, its nature is unchanged, and its susceptibility to inflammation is the same; and where the aneurism is diffused, no long time elapses before its further progress is arrested by a cellular tunic of a new formation.

The cases, which will be detailed when the report is completed, fully justify the foregoing statements.

The operation as now performed, is to pass directly through the sac one, two, or more needles, each armed with a double thread of silk, which is permitted to remain there for a certain number of hours.

In all the observations which have been made, it has happened that within sixty hours a sufficient quantity of inflammation has been developed to produce the effects which have been detailed. If in any case those effects be not produced within sixty hours, the threads may be drawn backwards and forwards, so as to excite any quantity of inflammation which may be desired.

Commonly within forty hours the effects will be occasioned: heat will be developed, and a blush will be manifested along the course of the artery, as well as a dull pain extending for a short distance. When these effects are evident, the threads should be removed; and if the heat and pain be considerable, a few leeches should be applied.

As soon as coagulation is produced, the tumour follows the same course as after the Hunterian operation.—*Lond. Med. Gazette, April*, 1835.

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5. *Hydriodate of Potassa in Periostitis.*—Some time ago, Dr. Williams published a paper in the London Medical Gazette, containing a favourable representation of the efficacy of this remedy in the treatment of periostitis. We find in the last number of that periodical, several very interesting cases of that painful affection reported by Dr. Clendinning, in which the hydriodate

of potassa was employed with the most happy effects. It was administered in doses of 5 to 15 or 20 grains, three times a day, and in one case as much as 30 grains was given at a dose, under the direction of Dr. Elliotson. Dr. Clendinning remarks, that he has also used it with great advantage in chronic articular rheumatism.

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6. *Vicarious Menstruation by the Lungs.*—N——, aged 32 years, fell into a pond, two years ago, when menstruating; the menses were immediately suppressed, and a copious hæmoptysis supplied the place of them, and became strictly periodical. Fifteen months ago she became pregnant, and during the whole of her pregnancy, during her confinement, and all the time of suckling, no spitting of blood occurred; but immediately on her weaning the child it returned.—*Hufeland's Journal der Practischen Heilkunde.—London Medical and Surgical Journal, April,* 1835.

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7. *M. Carron de Villard's Ophthalmic Ointment for the treatment of Scrofulous Conjunctivitis.*

℞ Ol. Hepatis Rajæ ʒ i.
Cyanid. Ferri grs. xxiv.
Cyanid. Hydrarg. grs. viii.

Mix the oil cautiously with the cyanides, previously well levegated, and then add

Ol. Essent. lauro-cerasi gtt. iv.

To prepare the oil of the ray, it will only ben ecessary to take a sufficient quantity of the liver of that fish, and submit it to a slow heat, until it is so far prepared, that the oil can be obtained by expression. It is of a dark colour, and resembles very nearly the cod liver oil, except that it becomes concrete on cooling. To give it more consistence, when this is necessary, a small quantity of spermaceti, or palm oil, may be added.

This ointment possesses very active properties, and in its employment, those precautions which it is necessary to observe in applying all active agents to the palpebræ and ball of the eye, must not be neglected. At first, only a small quantity should be used, rubbed down with an equal portion of cerate; but in proportion as the eye becomes accustomed to it, the strength may be increased.—*Bulletin General de Therapeutique, December,* 1835.

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8. *Epidemic Catarrhal and Blennorhagic Ophthalmia of Infants.*—M. Chardon fils represents, that he found the following treatment very successful in this affection. One grain of corrosive sublimate in two ounces of distilled water, for a collyrium. Internally, from four to eight grains of calomel, with as much jalap, were given in the course of the day. In some cases leeches were freely applied to the thighs. Under this course of treatment, not a single case terminated unfavourably.—*Lancette Français, December,* 1834.

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9. *Creosote as an anti-emetic Agent.*—In a paper recently communicated by Dr. Elliotson, to the Royal Medical and Chirurgical Society of London, on the internal employment of this agent in several diseases, he remarks, that he knows no medicine at all to be compared to creosote in arresting vomiting, and that he had repeatedly known it succeed when prussic acid had failed. It has proved in his hands equally powerful to arrest vomiting when present, and

to prevent it when threatening. In dyspepsia, also, characterized by pain, acidity, nausea, &c. he has found it very useful: but he has observed flatulency aggravated by it. It was given in doses of two or three drops at first, diffused in watery mucilage, and was gradually increased to ten drops or more. He found it useful also in several cases of neuralgia, and diabetes; and used in form of inhalations, composed of from 5 to 15 drops in a pint of water, he obtained good effects from it in chronic bronchitis; but in phthisis it was found to be powerless, except, that when inhaled, it sometimes rendered the respiration freer, and prevented expectoration.—*London Medical Gazette, March*, 1835.

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10. *Plaister employed in the Treatment of Whooping Cough.* By M. Corsin.—Having recently obtained very prompt and happy effects in several cases of whooping cough, by the application of the plaister described below to the spine, between the shoulders, I have felt it my duty to communicate the facts to the public, persuaded that the composition comprises all the properties requisite to insure its success.

℞ Emplast. Cicutæ, ℥ i.
Emplast. Pic. Burgund.
——— Diachyl. ā ā ℥ ss.

M. The mass should be spread uniformly on chamois leather, and sprinkled with 6, 8, 10 or 12 grains of tartar emetic, according to the age of the child.

This plaister applied within the first week after the attack of the disease, as well during the last epidemic as the preceding, produced constantly, in the course of 24 hours, active rebefaction and the development of small pearly pustules similar to those produced by the ointment of Autenreith, and occasioned a marked abatement of the number and violence of the paroxysms of coughing, and the vomiting which attended the disease.

When resorted to during the second or third week, in cases which had been previously treated with soothing expectorants, to which, as the disease advanced, aromatics and gentle tonics were added, the plaister, aided by these internal means, either arrested the disease in a few days, or it was greatly mitigated and its duration shortened.—*Lancette Français, Dec.* 1834.

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11. *Liquid Hydrosulphuret of lime, prepared by M. Deherde, for the cure of Itch.* By M. Lutens.—The inconveniences which attend the employment of the ordinary preparations of sulphur, decidedly the most effectual agent we possess, in the treatment of this disease, induced M. Morren to endeavour to discover some preparation which would not be liable to so many objections. This he thinks he has found in the liquid hydrosulphuret of lime, which has been extensively employed in several public hospitals, with very great success. M. Lutens has also used it with the most happy results in the Hôpital de Grand. Deherde recommends the following process for its preparation, and the subjoined directions will explain the rules to be observed in its administration.

Take one part of sulphur, two parts of subcarbonate of lime, and nine parts of water, boil them in an earthen vessel to complete saturation; then decant the liquor, and filter. Frictions with this liquid are to be employed three times a day, an ounce and a half being employed each time. A cure is generally effected in about three days. In the course of a month, about eighty

itch patients were treated at the Hôpital de Grand by this remedy, all of which were cured within an average period of three days. The fluid is transparent, of a deep brown colour, and has the odour of sulphuretted hydrogen. When rubbed upon the skin, it leaves an orange yellow stain, which disappears in a few hours. On the first day, it produces considerable itching, which is especially experienced after completing the frictions; and all the pustules are cauterized, as though they had been acted on by a concentrated acid. No excoriation or exfoliation of the cuticle will be produced, unless too much of the liquid is employed, or it is repeated too often; the wearing apparel and the bed clothes are not injured; the exhalations produce no deleterious effects, and a cure may be obtained at the trifling expense of a few cents. M. Lutens has also employed the liquid hydrosulphuret of lime with advantage in other cutaneous affections.—*Bulletin Medicale Belge, Février*, 1835.

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12. *Employment of Lactic Acid in Medicine.* By M. Magendie.—The lactic acid being one of the efficient agents in the dissolution of the food in the stomach, it occurred to me, that it might be employed with advantage in dyspepsia, or in cases of simple debility of the stomach. With this view I have administered it both in form of lemonade and pastilles. The following are the formula which I have generally employed:

Lactic Lemonade.

℞ Liquid lactic acid, ʒ i—4.
Water, ℔ i.
Simple syrup, ℥ ij.

Pastilles of Lactic Acid.

℞ Pure lactic acid, ʒ ij.
Powdered sugar, ℥ i.
Gum Tragacanth, qs.
Oil of Vanilla gtt. iv.

To be made into Pastilles weighing half a drachm each, which should be kept in a close vessel.

As many as six of these pastilles may be taken in the twenty-four hours.

On account of the promptitude with which the lactic acid dissolves the phosphate of lime, it is reasonable to presume, that it might be employed with advantage, in the treatment of urinary calculi which are composed of that substance. I have not yet tried its efficacy in these cases, but propose to do so on the first opportunity.

I have commenced a series of clinical experiments with the lactates of potash and soda, but have not as yet obtained any results of sufficient importance to deserve to be communicated to the public. I nevertheless recommend these salts to the attention of the profession.—*Lancette Français, Dec.* 1834.

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13. *Injection of foreign substances into the Arteries distributed to the Brain, in living Animals.* By Professor Mayer, of Bonn.—The fluids chiefly employed were quicksilver and common wax injection.

In the first experiment, the injection of some quicksilver into the carotid artery of a rabbit produced indications of intense suffering. Then came gid-

diness, rolling of the head, insensibility of the eyes, at first on one side, then on both, *tetanus*, failure of the action of the heart and respiration, and death in twenty-two minutes.

Upon dissection, the temperature in the abdomen being still 104° Fahrenheit, muscular irritation and the action of the heart were no longer cognizable; but the peristaltic motion was active. The pulmonary veins were red; the right *sinus* of the heart contained a moderate quantity of black blood; the left *sinus* some red blood. The lungs were natural; the stomach was full of food; the gall-bladder empty.

The arteries of the eye contained no quicksilver; but a cervical muscle on the right side presented some. This metal was found also in the arteries on the surface of the right and left hemispheres of the brain, and the surface of the *cerebellum*. When the brain was removed, it was observed that the quicksilver was in both carotid at the base of the brain. The arteries of both lateral chambers, and those of the *corpora quadrigemina* were full of it. But in the substance of the brain was none.

In the second experiment, some quicksilver was injected into the left carotid artery of a strong full-grown rabbit. In three minutes the animal became convulsed, and screamed, and the head was thrown backwards; respiration and the action of the heart ceased; the eyes, nose, and ears, were insensible, while the trunk, the hind legs, and the tail, continued still sensible. At the fourth minute, the animal was lifeless.

Upon dissection the basilar and carotid arteries were found full of quicksilver, globules of the metal were seen in the ciliary artery of the right eye, and two globules in the anterior spinal artery of the spinal chord.

The right and left sinuses of the heart were full of dark-red blood. The lungs were natural.

In the third experiment of this kind, quicksilver was injected by a small tube into the left carotid artery of a gray rabbit; while about half an ounce of blood escaped. The consequences were the following: Motion to the right in a circle; failure of the action of the heart, respiration, and the production of animal heat; palsy of the head, and the eyes, and the ears, first on one side, then decussating; *trismus;* indifference to food; inability to swallow, and *ileus;* spasmodic rigidity, and death on the fourth day.

Dissection disclosed the following phenomena. The temperature in the pectoral cavity was 77. Several arterial branches, particularly three or four on the surface of the left hemisphere, and also the ophthalmic artery, were filled with quicksilver. The hemisphere itself presented several chalk-white spots. In the left ventricle, the *corpus striatum* was completely destroyed, and the greater part was absorbed; and in the destroyed mass was observed a vessel filled with quicksilver. The other parts of the brain and the *plexus choroides* were natural.

In the optic nerve, at the entrance of the *retina*, were several quicksilver globules. The cornea was reddish, the aqueous humour turbid, and a delicate albuminous film shut the aperture of the pupil.

The lungs were deep red. The right and left sinus of the heart were filled with dark slightly coagulated blood.

Some alkaline serum, which gave a white colour to blue litmus paper, was found in the abdominal cavity. The liver was brown; the bile deep-coloured; the spleen reddish-brown. The stomach was full of green food; and its villous membrane came away like a white pulp. Beneath this, and in the

muscular coat, were innumerable bloody exudations, from the size of a pin-head to that of a lentil, resembling mushrooms. About an ounce of gastric fluid, which reddened litmus paper, was found.

In the fourth experiment, some quicksilver was allowed to run into the left carotid artery of a rabbit, after which the artery was tied. The results were, palsy of the head and eye, loathing of food; *ileus*, with stercoraceous vomiting; ulceration of the *cornea* of the left eye; progressive emaciation to the 18th day, when strength was exhausted; the temperature was very low; the body was rigid; and death ensued.

On dissection, no quicksilver globules were found in the vessels of the brain. In the throat was an abscess. The organs of the chest and belly appeared to be wasted and shrunk. Excepting the ulcer of the *cornea*, the left eye was not morbid.

In the fifth experiment, Professor Mayer injected into the left carotid of a strong ram, by means of a common anatomical syringe, a small quantity of common injection, rendered fluid by means of heat. After one or two minutes, the head and throat were insensible and altogether paralytic. The head fell over on the shoulder, and the eye was insensible and dead. Respiration was immediately at the first suddenly and entirely stopped; but, on the contrary, the heart beat very quickly and strongly about 200 times in the minute. At the third minute, the fore-legs, and, immediately after, the hind-legs, were paralytic; the animal fell on the belly to the ground, unable to support himself; while slight convulsions in the fore-legs and hind-legs, and then in the tail, ensued; and sensibility was extinct in the fore-legs, and lingered still in a slight degree in the hind-legs and tail, but quickly ceased there also. The action of the heart soon became slower and feeble, till at the twelfth minute it stopped entirely, and death was complete.

Dissection showed that the injected mass had filled from the left carotid artery the whole circle of Willis, to the basilar artery. A small portion was found in the descending aorta, probably impelled from the right internal carotid. But there was none in the heart.

In the sixth and last of these experiments, a small quantity of the same injection was impelled into the left carotid artery of a goat, after the right had been secured by ligature to prevent the refluence of the injection. The same phenomena as in the last experiment ensued. A minute after injection, the head was void of sensation and motion; and this insensibility and palsy were at once propagated to the tail. The respiration suddenly stopped and never returned; though at the sixth minute a short gasp took place. At the tenth minute death was complete.

Dissection showed that the injected matter had penetrated from the left carotid artery to the cerebral vessels, as far as the basilar artery, and had thence displaced the blood, without, however, having moved it farther into the ramifications of the circle of Willis. In the external carotid also was found a small portion of injected matter mixed with blood; and in the right carotid also was a small portion. But no trace of it was observed either in the chambers of the heart, or in the arch of the aorta, or in its descending portion.

From the phenomena exhibited by the experiments now detailed, Professor Mayer deduces a series of physiological conclusions regarding the influence of the brain on life and its actions. Though these conclusions are perhaps rendered less palpable by the adoption of the thoughts and phraseology pecu-

liar to the German schools than they might have been, we shall study to exhibit them in as accurate and intelligible a shape as is practicable.

Professor Mayer distinguishes, like most physiologists of the present day, all the phenomena and actions exhibited by animal bodies into two orders;—first, those proper to animals, and second, those common to animals and plants. The former he distinguishes, like all his countrymen, by the denomination of phenomena of the *Animal Vital Sphere;* the latter by that of phenomena of the *Vegetative Vital Sphere;* and the hypothetical or assumed source of all these actions is a principle to which the Teutonic physiologists, from Blumenbach to the present author, have all applied the denomination of Vital Force, (Lebenskraft.)

The first general conclusion which Professor Mayer deduces from his experiments is the following. When the *encephalon,* understanding by this term the brain, *cerebellum* and *medulla oblongata,* has the supply of its conservative principle,—the blood, interrupted or cut off by ligature of its nutrient vessels, or by filling them with a foreign substance, the following phenomena ensue—first, in the sphere of animal life, impaired consciousness, *vertigo,* diminished sensitive energy, indicated in the decussating direction, insensibility, palsy, extinction of irritability, and death;—and, secondly, in the sphere of vegetative, organic or automatic life, failure of the action of the heart and respiration, evident inability to swallow, with inverted peristaltic motion, falling of the animal temperature, spasmodic closure of the mouth, *tetanus,* rigidity, and death.—*Edinburgh Med. and Surg. Jour.*

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14. *Carbonate of Iron in difficult Menstruation.*—There are several forms of difficult menstruation, but one, which has not as yet much attracted the notice of writers, is connected with a true neuralgia of the hypogastric plexus. In one case of this kind, where antiphlogistics, opium, and other narcotics, &c. were in vain tried for several months, Dr. Trois succeeded in obtaining a cure by large doses of the carbonate of iron.—*Venetian Journal.—Lancet, March,* 1835.

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15. *Physiology of the Schneiderian Membrane.* By B. F. Wing, M.D.—The following experiments, which can be easily repeated by any one disposed to try them, will show that many sensations which are usually referred to the tongue, are in reality perceptions of the pituitary membrane.

Experiment 1.—A student of the profession consented to become a subject for the trial of his taste in discriminating medicinal substances. He was accordingly blindfolded, and his nose closed. In this condition he received a small quantity of tinct. cinchonæ, (its flavour being particularly offensive to him) he immediately declared it to be bitter, and supposed it to be laudanum. His disappointment on being put in the possession of his senses, can easily be conceived.

Exper. 2—The subject of the first experiment was again desirous of exerting his power of discriminating between tastes. After being prepared as above stated, a solution of sugar was used, its sweetness was readily discovered, but in its peculiar flavour he was again disappointed.

Exper. 3.—Was tried upon a person entirely ignorant of its object. Powdered columbo was introduced into the mouth of the individual after he was

prepared in the usual manner, its bitterness was perceived. Of its peculiar qualities he was an incompetent judge.

A similar experiment was tried with the tinct. assafœtidæ; a burning sensation was perceived which is common to all spirituous preparations; but its peculiar and strong flavour he could not detect.

Many other experiments were tried without differing in their result.

No one who will take the trouble to repeat experiments upon this subject, will hesitate to refer flavourous sensations to the pituitary membrane, yet he will still claim the possession of a sense of taste, though it is much more limited in its range than has usually been supposed. Thus it is the province of the tongue to perceive bitter and sweet, which are real tastes, while no other organ however sensible to mechanical impressions, can perceive these properties.

Let us examine the relation existing between this and other organs, or the power this organ, when affected, possesses of producing in remote parts, similar sensations and affections, modified according to their organization and function.

The following experiments will show our liability to consider some prominent organs as *primarily* affected, whereas they are only called upon to sympathize in the general affection produced by an impression first made upon some part entirely overlooked.

Exper. 4.—This was tried to ascertain the susceptibility of the individual, (the subject of the experiment,) to the action of tobacco, as it is commonly used in the form of cigars. In thirty minutes after having commenced smoking, slight nausea was felt; in forty, vomiting supervened, and in fifty, the vomiting and other effects usually attendant upon the use of tobacco increased to such a degree, that its use was suspended. It required several hours to restore the experimenter to his usual state.

Exper. 5.—This experiment was tried to ascertain the importance of the schneiderian membrane in producing the effects of tobacco, either of a pleasant or an opposite character. It was tried upon the same individual, after having closed his nose carefully so that no current of air could pass through it. The substance of which the cigars were composed could not be detected by the individual, when thus prepared, without the aid of other senses than that of taste. After smoking one hour, slight burning of the fauces was the only uncommon sensation perceived. At the expiration of an hour and a quarter, very gentle emesis took place, unaccompanied by any nausea or lassitude, removing the burning mentioned above. The experiment was continued one hour and fifty-five minutes without any further effect. On removal of the bandage, the person was immediately made sensible of the substance he had used.

Exper. 6.—A strong decoction of tobacco was kept warm over a dish of ignited charcoal, and an individual inhaled the vapour through his mouth, having previously secured his nose, one hour and thirty minutes without any inconvenience.

The same experiment was tried, differing only by an exposure of this membrane. In twenty minutes nausea was produced, followed soon by vomiting.

Substances applied immediately to the pituitary membrane, sometimes occasion symptoms of grave disease.

A case was related to me by a distinguished physician, where a partial paralysis of the organs of articulation was occasioned by the use of *snuff*. These symptoms excited much anxiety until the real cause of them was discovered. The habit, however, had become so strong that the person preferred an impediment to his speech to a deprivation of his accustomed stimulus. In a second case, the physician was consulted for general tremor and paroxysms of violent palpitations of the heart. After considerable investigation, the cause of these affections was found also to exist in the inordinate use of snuff. Its use was immediately abandoned, and the symptoms very readily subsided.

Ought not this membrane to deserve more consideration as the avenue through which the causes of disease make their attack? Its situation necessarily exposes it, in a peculiar manner, to all causes that are conveyed through the medium of the atmosphere.

In many instances, where the exposure to exciting causes is very brief, and and their effect sudden, is it not more rational to suppose that they affect primarily this nervous membrane, rather than that they are admitted through the skin, where, to say the least, absorption is slow, if the cuticle is perfect, or through the lungs, or stomach.

Dr. Good mentions a case where typhus was communicated by smelling a rose used to decorate the dead.

Persons in apparent health, passing rapidly through diseased districts, have received disease.

Cases have sometimes occurred when patients have even complained of the first effects of disease being manifested in this membrane.

A fisherman, apparently well, on landing from a very healthy voyage, passed with his companions, in the night, a house in which a number of individuals were sick, without his knowledge; he alone perceived an unpleasant odour arising from it, of which he spoke to his companions. He soon complained of nausea and oppression at the stomach. From this time he grew sick, and finally died of the disease existing in the house which he passed.

A person having the superintendance of a dissecting room, in which an attempt was made to preserve a number of bodies for future use, was necessarily occasionally exposed for a few minutes, to the unpleasant odour arising from their partial decomposition. In this individual's constitution there was a predisposition to intermittent. In almost every instance of exposure, however short, a chill and fever would be the consequence, although days would pass, unless thus exposed, without any indication of disease.

If it is established, that deleterious influences upon the economy are produced through the medium of this membrane, it is evident that it will afford an opportunity of applying means for counteracting disease.

In some cases this part remains quite sensible, while others are in a measure torpid.

Sometimes we can apply medicines to this membrane, when all other avenues to the introduction of remedial agents are partially closed.

In syncope it has been an almost universal practice to stimulate the pituitary membrane, and arouse the general system through its agency.

Stimulants, when applied in equal quantities to this part, are much more efficient than when received into the stomach.

In coma the practice has been attended with some success.

I will not attempt to enumerate the cases in which this practice may be beneficial, or the medicine suitable for use. If such practice is found practicable, the good sense of each individual of this society will decide these points.—*Boston Medical Magazine, June*, 1835.

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16. *Sulphate of Alum and Potass in Sore Throat and some other Mucous Inflammations.*—M. Velpeau, of *La Charité*, read before the Royal Academy of Medicine, on the 16th of March last, a paper on this subject. Having been witness of the excellent effects obtained by M. Bretonneau at Tours, in several cases of severe epidemic angina, M. Velpeau was desirous of trying whether the same means might not be successfully applied to the treatment of simple inflammatory affections of the throat. He has experimented with hydrochloric acid, nitrate of silver, and alum, and come to the satisfactory conclusion that not only the malignant forms of angina are arrested by the application of alum, but also those depending on small-pox, scarlatina, &c. and those of a simple inflammatory nature. Twenty-five individuals were submitted to the treatment, and, in all, the inflammation, which was characterized by redness, pain, fever, &c. was arrested at once. When employed in powder, the alum is applied most readily on the index finger of the surgeon. It is necessary that all the affected points of the pharynx should be covered with a layer of the substance; hence, when the inflammation is extensive, the finger must be moved at various returns round the parietes of the back of the mouth. The application is to be repeated, according to circumstances, once, twice, or three times a day. During the interval the patient is to gargle the throat with a solution of two to four scruples of alum to four ounces of honeyed barley-water. The application commonly determines cough, nausea, &c. but these and the disagreeable taste of the alum soon go off; the pain and fever almost universally commence to diminish after the first or second application, so that on the second or third day the patient is in a state of convalescence, the most remarkable effect being the sudden cessation of the fever, and the change in the timbre of the voice. In slight cases of inflammation, gargles with alum are generally sufficient for the cure, but in more severe and violent attacks the powder must be placed in contact with the affected membrane without delay.—*The Lancet, April*, 1835.

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17. *Foreign bodies introduced into the Rectum.*—A very interesting case of this kind has been recently reported by M. Thiandière, the leading particulars of which we shall select.

Isidore Chevais, aged 22, with the object of overcoming an obstinate constipation of the bowels, introduced into his rectum a forked oak stick of the following dimensions: the longer branch was five inches; the other was three inches and a half in length, including the large end by which the two were united. At their point of union, they were separated by the space of an inch, while the greatest distance between them was two inches. The diameter of the branches was four lines; that of the large end which united them half an inch. It was introduced with the large end foremost, and when the shorter prong had entered the rectum, the individual made an effort to scoop out the indurated fæces. His efforts, however, proved unavailing, and he was compelled to desist on account of extreme pain. When he attempted to withdraw the wooden crotchet he found it impossible to succeed, and adopted the

singular alternative of forcing the whole of it into the rectum, under the supposition that it would be consumed with the aliments. Tormented by horrible pains of the abdomen, difficulty of voiding urine, and great disturbance of the digestive function; overwhelmed besides with despair, and not daring to apprize his parents of his situation, he lived in constant fear of taking food, betook himself to solitude, and anxiously hoped that the cause of his sufferings would be passed by stool. Finally vanquished by his torments, he determined to seek professional aid. M. Thiandière, on making an examination, readily detected the presence of the foreign body, but it was so high that he could barely touch its lower end with the tip of the index finger. He could neither ascertain its size nor the position it occupied in the intestine. He obtained satisfactory information from the patient relative to the first point, by requiring him to provide a second crotchet of the same kind, and ascertained from him besides, the direction in which it had been introduced. An attempt was first made to extract it by means of forceps passed up through a speculum, but finding that by this means the lower end of the long branch only could be reached, it was determined that it would be useless to attempt to extract it by seizing upon that. He was on the point of abandoning the patient to his fate, when the thought occurred to him to lay aside all instruments, and trust to the hand alone. After washing out the rectum by an enema, the patient was placed with his hands resting on a chair, his breech slightly elevated, and the legs separated. The fingers, previously oiled, were cautiously introduced one by one, until the whole entered the rectum, when passing the index finger forward, and using the long branch of the crotchet as a conductor, he reached its point of union with the shorter one. He then searched for the position of the small branch, and succeeded, with some difficulty, in seizing it with the middle finger, and disengaging it from the fold of the rectum, in which it had become lodged. He finally managed, by passing his finger around the two prongs, to compress them towards each other, so as to include them in his hand, by which the rectum was protected from injury, and in this way succeeded in extracting it entire.

A second enema was thrown up, the ordinary precautions against inflammation enjoined, and the individual regained his health without suffering any other inconvenience than what was a necessary consequence of the preternatural dilatation of the rectum.

A surgeon who had been previously consulted in the case, proposed to divide the branches of the crotchet by means of strong cutting forceps; but M. Thiandière thinks the operation would have been impracticable.

Several cases have been recorded in which foreign bodies of various kinds have been introduced into the rectum, chiefly with the design of overcoming constipation. A monk introduced a bottle containing Hungary water, for this purpose, through the cork of which a small aperture was made, to allow the fluid to flow into the rectum. After using various means to extract it without success, it was finally withdrawn by the small hand of a child. Desault extracted a porcelain jelly cup, which had been introduced about eight days previously. It was of a conical shape, and about three inches in length. It was extracted by breaking it into fragments, and withdrawing the pieces separately. Saucerotte extracted a wooden peg, three inches long and two in diameter, by introducing the finger into the rectum to confine the foreign body, while the point of a sharp corkscrew was inserted into it. Forceps and

other means had been before tried without success. Marchetti was called to extract a hog's tail which had been introduced with the large end foremost, the hair having been previously slightly clipped, in order to render them more rigid and irritating. As they resisted all attempts to withdraw it, he provided a canula of the proper dimensions, and after having secured the end of the tail which projected from the anus by means of a strong waxed thread, he passed this through the instrument, and slid the latter upwards into the rectum so as to include the foreign body, which was thus easily extricated. M. Tuffet reports the case of an individual, who introduced a large snuff box of nearly a cylindrical shape, which was extricated with great difficulty. Notwithstanding this, the same person afterwards introduced a wooden goblet, which as it could not be extracted, finally destroyed his life. The same gentleman reports the case of another individual, who introduced a wine glass into the rectum, which became broken and caused profuse hemorrhage; the fragments were extracted by means of forceps. On a subsequent occasion, he inserted a glass bottle, which occasioning great pain, the thought occurred to him to break it into fragments and extract the pieces. To accomplish this, he passed into the rectum the handle of a common fire shovel. Considerable hemorrhage followed; but the fragments were extracted, and no bad consequences ensued. A peasant who was affected with constipation of the bowels, attempted to remedy the evil by introducing a small stick into the rectum. It was carried up by the antiperistaltic motion of the intestine; but again descended, and was extracted by Scarpa, by means of forceps and a catheter containing a leaden stilette. A weaver, who had heard of suppositories for the relief of constipation, introduced his shuttle into the rectum, containing its roll of yarn.—*Bulletin General de Therapeutique, Janvier*, 1835.

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18. *Sugar Poisoned with Oxide of Lead.* By C. T. Jackson, M. D.—During the past winter and spring season, a number of persons said to amount to upwards of one hundred in number, in the town of Calais, Maine, have suffered from a disease of the bowels of a violent character, resembling *colica pictonum* of the severest kind. Three of the individuals have died in consequence of this disease, after a protracted and most distressing illness; several others are still in a very critical state, and have suffered more or less from paralysis of the extremities. Through the kindness of one of the sufferers, I have been favoured with the names of forty-eight individuals who are still sick with this disease.

The cause of this distressing malady has been carefully examined into by Dr. S. S. Whipple, of Calais, and through his exertions suspicions were finally fixed upon the sugar which had been used in the families of those who suffered; and it was ascertained that the only article of which they had all partaken, was sugar obtained from one importing house at St. Stephens, N. B. It was furthermore observed, that those persons in the families where the disease prevailed, who did not make use of sugar, escaped altogether, while those who indulged most freely in its use suffered the most severely. Thus the chain of evidence was complete against the sugar, and the disease supposed at first to be an epidemic, is in the end proved to arise from poison. Five or six of those persons who were subject to this colic, set out for Boston for the purpose of obtaining medical advice, one, a young lady by the name of

Darling, died on board the packet, under the most distressing symptoms, attended with paralysis of the limbs. The other passengers are undergoing medical treatment in this city, and still bear the marks of great suffering and extreme emaciation, the countenance in every one whom I have seen, showing that peculiar expression which accompanies disease of the abdominal viscera.

I have minutely examined four of the sufferers, and from them have learned the foregoing particulars. It appears that the sugar was brought from Barbadoes late last autumn, and was sold by an importer at St. Stephens, who supplied the trade at Calais. It was also ascertained that the captain of the ship who brought out this sugar, had a small adventure of the same kind, and that he, and those to whom he sold his sugar, suffered from this disease.

After collecting the above evidence against the suspected sugar, it was thought advisable to make a chemical analysis of it. Four parcels, consisting of about a pound each, were put in my hands by Mr. Lee and captain Rodgers, with a request that I should make an analysis of each of them, and ascertain positively whether they contained poison or not.

The parcels were marked Nos. 1, 2, 3, and 4, and were subjected to analysis in the order of their numbers.

My suspicions and those of Dr. Whipple were fixed on oxide of lead as the poisonous ingredient, and the results of the analysis prove that this opinion was well founded.

They also prove, that a small quantity of this poison, when taken daily, although no immediate disturbance is felt, produces great derangement of the system, and induces a most dangerous and painful disease, which lingers long in the constitution after the use of the deleterious article has been suspended. How often do people exclaim that certain articles are not poisonous, because they have sometimes partaken of them with impunity, when we know that if persevered in, disease and death must be the consequence of their temerity.

I annex the subjoined extract from my laboratory notes.

June 7th, 1835. Four parcels of brown sugar were handed to me by captain Rodgers and Mr. Thomas Lee for chemical analysis. They are marked Nos. 1, 2, 3, and 4, and weigh about a pound each. No. 1 is evidently from a different lot from the other samples. It is of a lighter yellow colour, and coarse grained; while the others are much darker and smaller grained, and in lumps of a still deeper colour. There is nothing peculiar in the taste or appearance of any of the samples, that would cause any suspicion to be raised against the quality of the sugar.

Analysis.—The object of the analysis is to determine if the sugar contains any oxide of lead or copper.

Five hundred grains of the sugar No. 1, burned to cinders in a platina capsule, the cinders crushed to powder in a wedge-wood mortar, and then burned to ashes in the capsule. The ashes was placed in a green glass flask, and digested with nitric acid, and evaporated to dryness; then treated with water and filtered. The filtered solution was placed in a flask, and a current of sulphuretted hydrogen gas passed though it until the liquor was saturated. No precipitate took place, from which it will appear that this sample does *not* contain any lead or copper.

I have since learned that this sugar was sent for the purpose of ascertain-

ing if it was free from poison, and was not of the kind used by the family at the time they suffered from the disease.

Five hundred grains of No. 2, which came from the house of Mr. Lee, was treated exactly as No. 1; and when the sulphuretted hydrogen gas was passed through it, a copious precipitate of sulphuret of lead took place, which being collected on a filter, washed, dried and weighed, amounted to 1.6 grains; equal to 1.38 grains metallic lead, equal to 2.337 grains oxide of lead. This will give nearly 38 grains of oxide of lead to the pound of sugar.

Five hundred grains of No. 3, treated in like manner, gave a precipitate of sulphuret of lead, the weight of which is precisely the same as that obtained from No. 2.

No. 4, sugar from Mr. Darling's family. Five hundred grains treated like No. 1, gave, when sulphuretted hydrogen gas was passed through it, sulphuret of lead in weight equal to that from No. 2. The sulphuret of lead obtained from Nos. 2 and 4 was reduced before the blowpipe to metallic lead. A portion of each of the precipitates was examined by tests for copper, and none discovered.

The lead in this sugar may be either in the state of acetate, malate, or saccharate of the oxide of lead, the sugar combining with it so as to form a chemical combination. How this sugar became contaminated with lead I am unable to say. There is no suspicion of criminal design attached to any one, and it is probable that leaden reservoirs were used for the syrup, on account of the comparative cheapness of the metal, and that the free acids in the juice of the cane corroded the lead, and thus produced the poison; which crystallized in combination with the sugar. The dreadful effects of this poison should by all means reach the sugar planters, who distribute so noxious an article to the people of many countries, and must produce consequences at which humanity shudders. If the planters continue to manufacture this poisonous compound, and send it abroad regardless of the consequences, after they learn how much suffering it has caused, (which I am not willing to suppose they will do,) they will become criminal in the eye of British law, and liable to the severest penalties.

Indeed, we may feel assured, that as soon as they know the effects of their sugar, they will immediately examine into the source from whence the poison was derived, and prevent a continuance of the evil. Their *own interest* would cause this to be done, even if they were not impelled by higher motives, for their sugar would soon have a bad reputation, which would destroy its sale in the market. The researches into the cause of this disease, eminently show the advantage of rational medicine over empiricism, for the empiric would never have traced the disease to its remote cause by a connected mode of research, and consequently would have been unable to learn the cause of the malady and its method of cure. The symptoms in the cases all pointed to lead as their cause, and chemical analysis has confirmed the truth of this opinion. The cause is thus found out and removed; and rational medical treatment will soon restore the surviving sufferers to health.

[*Boston Medical Magazine, June,* 1835.

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19. *Recovery from Poisoning with two drachms of Arsenic.* By John Greening.—January 27, 1833. About seven o'clock this evening I was requested to visit Mrs. T——, residing at Angel-row in this city, a widow,

38 years of age, of sanguine melancholic temperament, who had taken, in toast and water, a quantity of arsenic. I found her in bed, her head supported, and the saliva flowing copiously from her mouth. She had also vomited nearly a chamber-pot full of fluid. The face was swollen, flushed, and covered with cold sweat; pulse 120, feeble and irregular; and the breathing was very difficult. In consequence of a quarrel with her daughter she had gone to a chemist's, and purchased, as the shopman says, two drachms of arsenic, and drunk it in fluid, no other person being in the house at the time.

I immediately administered large quantities of soap and water, and after obtaining a stomach-pump from the Infirmary, I washed the stomach well out with the same mixture, which was put by for future inspection. There was evidently a spasmodic contraction of the œsophagus; the retching and vomiting had nearly approached to convulsions. Upon asking her several times if she had taken all that was bought, she said "yes."

At nine o'clock she was more sensible, and complained of excruciating pains and burning sensation in the throat and stomach. The soap and water was persisted with.—Ten o'clock; still severe pain over the abdomen, which is much swollen; the vomiting continues. She was left for the night under the care of a proper person. Magnesia in milk for her drink.

Monday, seven A.M. More composed, but says she shall die. Vomiting throughout the night; pulse 95, small; great thirst; bowels have been moved four times, with excruciating pain and tenderness in the epigastric region. Mitt. sang. ad ℥ x. Sumat Opii gr. ij tertia quaq. hora. Emp. lyttæ ampl. scrob. cordis, and to continue the magnesia and milk.

One o'clock. She feels somewhat easier. Mitt. sang. ad ℥ viij. Injice illico per anum clysma purgans.

Ten o'clock P.M. Bowels open; less pain; animal spirits much depressed; vomiting continues; pulse 98; blood buffed; thirst. Take two drachms of *Carbon. of Magnesia in Decoct. Hordei* 4ta quaque hora.

29. Tuesday, nine o'clock. Some sleep; burning pain of the throat and stomach still continues; still vomiting; the two first doses of medicine remained in the stomach for half an hour; the blister rose well. Rep. clysma. V. sectio ad ℥ x, et pilul. Opii.

Feb. 1. Up to this time she had gone on well; has not vomited since four o'clock yesterday afternoon; complains of great pain in the bowels and great thirst. Rep. Emp. Lyttæ, et mistura.

2. Vomiting has ceased; bowels open; a large quantity of mucus was mixed with the feces; pulse 108, soft and quick. From this time up to 20th nothing particular occurred; and on the 23rd she was perfectly recovered.—*Lancet, March*, 1835.

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20. *New Remedy against Cancer.*—The *Hippomanes Mancinella*, of the family of the Euphorbiacæ, has been known since the conquest of America by its poisonous effects. It is the juice of this tree which the Indians employ to envenom their arrows; and it is also extensively employed by the hordes which inhabit the banks of the Oronoko, as an anticarcinomatous remedy. Numerous experiments have proved that arsenic is neutralized by the secretion of a cancerous ulcer, while it preserves its poisonous properties when placed in contact with any other sore. The same phenomenon is observed with respect to the mancinella: its poisonous effects are in like manner neutralized by the

secretion of cancerous ulcers. The Indians who employ this substance in the treatment of cancer, surround the wound with a pasty material, and then apply to the centre of the sore a few drops of the juice of the mancinella; an eschar soon forms, and coming away in about forty-eight hours, leaves a clean wound, which rapidly heals.

M. Germon, of Marseilles, has witnessed a great number of cures effected by the application of this remedy, which he recommends to the attention of physicians.—*Jour. des Con. Med. Chir.—Lancet, April,* 1835.

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21. *Obliteration of the Ventral Aorta.*—At the last meeting of the *Society of Medical Observation,* Paris, M. Louis presented a case of complete obliteration of the ventral aorta. The patient died at the *Hopital de la Pitié,* of pulmonary disease; and no great change could be observed in the temperature or external appearance of the lower extremities, although minute examination did not show any collateral branches of note by which the circulation could have been continued to the popliteal arteries. The femoral was obliterated during the greater part of its course.—*Lancet, April,* 1835.

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22. *Anomalous Articulation.*—M. Andral presented the coxo-femoral articulation of a subject of whose previous history he was unable to obtain any account. The articulation exhibited the following anomalies. The head of the femur was nearly double its natural size; it preserved its perfectly round form, and was completely contained in the cotyloid cavity, which presented an excess of development exactly proportional. The head of the bone was, as it were, incarcerated in the cavity by ossification, with hypertrophy of the cartilaginous rim. The osseous matter deposited on the head of the femur extended all round beyond the disc of the head, so as to leave a deep circular furrow between it and the neck. M. Cruveilhier noticed that this prominence of osseous matter round the neck should be distinguished from a layer that would have enclosed the head and neck of the bone together. There was no trace of ligamentum teres. The cartilages of the incrustation were unequally laid down, and in some places supplied by a layer of ivory material.

Anomaly of the Kidney.—M. Boiret presented the following curious anomaly of the kidney: The right kidney, very small, was placed in the cavity of the pelvis, transversely across the median line, in the place usually occupied by the uterus between the bladder and rectum. There was no supra-renal capsule, and it received its artery from the bifurcation of the aorta, so that the sacra media in fact became the renal artery: the real sacra media was very small and long, in consequence of the aorta dividing at the level of the second lumbar vertebra. The uterus, of a long, cylindrical shape, was situate altogether to the left side, behind the ligament of Fallopius. The ovary and its ligament of the right side had escaped through the inguinal canal, and formed a hernia, externally, of so peculiar a shape, &c. that it was very difficult to say whether it was femoral or inguinal.—*Archives Generales, February,* 1835.—*Lancet, April,* 1835.

Editorial Notices and Acknowledgments.

We return thanks to Drs. Chatard and Baron for their communications. They are on file for our next number.

Were it not that we have become convinced by past experience, that any effort to incite the members of the profession generally, to communicate the fruits of their observations, would be a mere idle waste of words, we would reiterate our appeal to them, to aid us in our well meant endeavours to improve the science of medicine, and circulate its important truths throughout our widely extended country. The majority of them, unfortunately, seem to be deaf to all such requisitions upon their time, and manifest a disposition to plod on, from day to day, in a perpetual routine, utterly unmindful of any other duty than the application of remedies, and with no higher ambition than the transmutation of them into dollars and cents.

The following publications have been received within the last month:

Transactions of the Medical Society of the State of New York, vol. ii. part ii. Albany, 1835. E. W. & C. Skinner. (*From the publishers.*) This half volume of the society's transactions contains several very good papers. Amongst them we find some that have been previously published. We have already commended the course pursued by the society in publishing its memoirs, and we hope that it will continue to enrich the science, by the valuable contributions of its members.

Copland's Dictionary of Practical Medicine, comprising general pathology, the nature and treatment of diseases, morbid structures, and the disorders especially incidental to climates, to the sex, and to the different epochs of life, &c. Part iii. London, 1835. Longman, Rees, Orme, Brown, Green and Longman.

Magazin der Auslandischen Literatur der gesammten Heilkunde, und Arbeiten des Aerztlichen vereins zu Hamburg. Herausgegeben von Dr. G. H. Gerson und Dr. Nikol. Heinr. Julius. for January and February, 1835. (*In exchange.*)

Journal des Connaissances Medico-Chirurgicales, for April and May, 1835. (*In exchange.*)

The Edinburgh Medical and Surgical Journal, for April, 1835.

The London Medical and Surgical Journal, (Dr. Ryan's,) Part 38, for April, 1835.

The Dublin Journal of Medical and Chemical Science, No. 19, for March, 1835.

The London Medical Gazette, for March, 1835.

The Lancet, Nos. 24—27, for March, 1835.

Encyclographie des Sciences Medicales, vol. 30, for February, 1835.

Boston Medical Magazine, Nos. 21 & 22, for June, 1835. (*In exchange.*)

The United States Medical and Surgical Journal, No. 10, for May, 1835. (*In exchange.*)

The Boston Medical and Surgical Journal, Nos. 16 to 19, for June, 1835. (*In exchange.*)